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CONTENTS FOR FEBRUARY, 1929

Original Articles

President's Address, Southern Society of Orthodontists. By Dr. Harry E. Kelsey, Baltimore, Md. ---- 97

Welcome to the Southern Society of Orthodontists. By J. Ben Robinson, D.D.S., F.A.C.D., Baltimore, Md. ---- 101

A Discussion of Cases Presenting an Anterior Position of the Maxillary and Mandibular Arches. By Dr. Winston P. Caine, Chattanooga, Tenn. -- 104

The Operative Lengthening of the Lower Extremity. By Leroy C. Abbott, M.D., C. H. Crego, M.D., and A. O. Adams, M.D., St. Louis, Missouri-- 110

A New Modeling Composition for Accurate Orthodontic Impressions. By Eric H. Golden, D.D.S., St. Louis, Missouri---- 125

A Progressive Report of a Class II Division 2 Infraocclusion Case. By Burt Abell, D.D.S., Toledo, Ohio---- 131

Orthodontic Treatment and Result of a Case of Malocclusion of the Teeth Brought by Conditions Associated with Congenital Cleft Palate and Harelip (Case Report). By Milo Hellman, D.D.S., F.A.C.D., New York City 135

An Efficient Soldering and Cementing Cabinet. By B. L. Hyams, D.D.S., Montreal, Canada ---- 139

Department of Oral Surgery, Oral Pathology and Surgical Orthodontia

Preparation of Mouth for Insertion of Dentures. By Geo. F. Seeman, D.D.S., Nashville, Tenn. ---- 141

(*Continued on page* 16.)

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CONTENTS FOR FEBRUARY, 1929

(*Continued from page* 15.)

Diagnosis and Treatment of Swellings and Growths of the Mouth. By Sterling V. Mead, D.D.S., Washington, D. C. ---------- 151

Maxillofacial Prosthesis. By Roy L. Bodine, D.D.S., Washington, D. C. ---- 163

Department of Dental and Oral Radiography

Radiographic Examination for Orthodontic Diagnosis and Treatment. By Clarence O. Simpson, M.D., D.D.S., St. Louis, Missouri---------- 178

Abstract of Current Literature

Orthodontia, Oral Surgery, Surgical Orthodontia, Dental Radiography, Nutrition and Pediatrics ---------- 184

Editorials

Professional Interest in Advertising---------- 188

The Ninth Annual Meeting of the Southwestern Society of Orthodontists---- 191

Orthodontic News and Notes

Orthodontic News and Notes ---------- 193

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VOL. XV ST. LOUIS, FEBRUARY, 1929 No. 2

ORIGINAL ARTICLES

PRESIDENT'S ADDRESS, SOUTHERN SOCIETY OF ORTHODONTISTS*

BY DR. HARRY E. KELSEY, BALTIMORE, MD.

IN PRESENTING the customary President's address, I am bearing in mind the fact, that the time is limited and that the profession of orthodontia is already constantly receiving much good advice from many sources, among others, the numerous other presidential addresses that have been, or will be delivered during the year. Though there are one or two matters which may profitably be discussed briefly before the Society and are worthy of mention, because they have a bearing upon the future welfare of orthodontia, I will nevertheless interpret my duty on this occasion as being chiefly discharged, by heartily seconding the welcome which Dr. J. Ben Robinson, of the Baltimore City Dental Society, has already extended to you.

We only hope your visit to Baltimore will prove a pleasant and profitable diversion on your way to Buffalo, and that you will derive the greatest possible benefit from the larger and more important national meeting of the American Society of Orthodontists. Not that I would minimize our program in the least, but in the nature of things it cannot be as extensive and cover the field as thoroughly, as the larger Buffalo meeting. It may perhaps be thought unwise to devote a half day of a two-day meeting to recreation, but most of us will not be having two, but six days of orthodontia, before we are through with the Buffalo meeting. Therefore, it is well to fortify ourselves with fresh air and recreation on every possible occasion, so that we may not be tired out already in going from this meeting to the other.

It is furthermore our belief, that men should have equal rights with women, and as they are going to spend this afternoon at one of the Country Clubs, we think it only fair that the men should be permitted to do the same,

*Read at the Annual Meeting of the Southern Society of Orthodontists, Baltimore, Md., April 27 and 28, 1928.

especially as the ladies are going to be entertained tomorrow, while we are devoting ourselves to the more serious aspects of the meeting.

If the quality of the material presented during our brief sessions and the entertainment and good fellowship seem equal to, or even approach that of previous meetings, inspiring men in other sections of the country, as it has in the past with the desire to join our Society, we shall feel amply repaid. And now after speaking of conditions concerning this and past meetings, it might be well to say a word with regard to the future.

This Society like regional societies elsewhere, is in close affiliation with the American Society of Orthodontists, which is naturally recognized as the national body. This affiliation is at present maintained chiefly by reason of the fact, that so large a percentage of the members of the local societies are also members of the American Society of Orthodontists, however, a more definite affiliation may be sought later on. Recently a fellow member of the American Society of Orthodontists spoke to me of the advisability of organizing the members of the orthodontic specialty throughout the country, along the same lines as the American Dental Association, that is, making membership in the American Society of Orthodontists dependent upon first securing membership in one's local society, it being of course a component society of the American Society of Orthodontists. This plan has strengthened and worked in other ways to the advantage of the dental profession in the broader field of the American Dental Association, and it might tend to create a much larger membership for the American Society of Orthodontists. Whether this is a desirable thing, or whether it would be like creating a wheel within a wheel I do not at present pretend to know. It can be argued that every orthodontist should be affiliated with organizations which represent his profession or specialty, as he is thereby much more likely to keep up to date, and thus be fitted to give better service to his patrons. On the other hand, if it would tend to divert the entire interest of orthodontists from their Mother Profession of Dentistry, and cause them to become more narrow in their outlook on the health problem in general, the result could not be considered advantageous. The larger the organization also, the more it is possible for it to become infected with politics, which has already in the past sometimes tended to retard true, professional advancement.

The sense of individual responsibility which the members have in a small organization, too, is often lost in one so large, that their vision is obscured by numbers and their powers delegated to some one chosen for the purpose. Many believe that as the orthodontic section of the American Dental Association already embraces in its membership practically all of the orthodontists in the country, it should be the vehicle for the broadest national professional development, and I do personally feel that it should have the strongest support from its large membership, something it cannot be said to have had up to the present time, the main reason being that the rank and file of orthodontists feel that they do not want to attend too many national meetings, and they have hitherto gone by preference to the meetings of the American Society of Orthodontists. I do not for a moment contemplate offering any recommenda-

tion concerning this problem, but believe sometime in the future it is likely to come up for serious consideration, and it is, therefore, a matter about which we should be thinking.

Another problem which I think belongs quite justly to the organizations representing orthodontia, is the question of a wider service—one that is extended to the poor. In other words, the service which is given in other branches of the healing art, in hospitals and dispensaries, and which we have not been numerous or strongly enough endowed to provide (at least to any conspicuous degree) up to the present time.

The same is true of dental service generally and though undoubtedly we are not doing all we might in this direction, there is some justification for this state of affairs, that is not generally understood by the layman and even the medical profession. It is because of the relatively enormous amount of time required by dental and orthodontia operations, that mouths cannot be put in the condition they should be, in most cases, without long periods of treatment. The child who has a bad set of teeth, for instance, requires long and steady care to put the mouth back into proper condition, just as it would if it were suffering from a malocclusion. On the other hand, if the tonsils are badly infected and need to be removed, it can be done in half an hour and a day or so in the hospital, and the thing is ended.

The Forsyth Institute in Boston, and the Eastman Dental Infirmary in Rochester, offer service to the poor in those cities, which is emulated by efforts on the part of the profession in other cities, but of course for lack of funds they have not been able to even approach these institutions in the extent of service offered. Cities, towns, and counties, are also beginning to recognize their duty to the poor, and it is through this as well as through large private endowments, that dental and orthodontic service will eventually be available to all who require it. It is up to the dental profession and its specialty of orthodontia to develop this movement to an adequate culmination.

There is one other thing which I feel is worthy of discussion before any society, and perhaps in doing so, I am condemning myself out of my own mouth. I refer to the vast amount of material through which we are compelled to wade in a great many of the journals, to be sure that we miss nothing of the advanced thought in orthodontia. It has always seemed to me, that an idea once presented should not be dressed up, given a new title, and presented over again as a new paper. If some new data can be added to the old, a brief report of that should be made, as an addition to the original paper. If one has read the original paper he would not then have to read the whole thing over again to get what is new or has been added or interspersed through it. New journals are being started at a surprising rate and the competition for new material is getting so great, that it tends to foster the situation to which I have referred.

Clinics may be given over and over again at meetings with great advantage, because one does not always grasp them the first time, and one cannot hope to get the full value from a published report.

Case reports too, even though they deal with conditions which have often been illustrated by other case reports, serve to establish the treatment in our

minds and may be freely presented at meetings with benefit to those who take the trouble to attend.

In closing I desire to express my sincere thanks to all those members who are contributing to the success of the meeting, either by offering something for the program, or merely by attending this meeting. The Secretary and Board of Censors are to be congratulated upon the program they have provided, and their devotion to their task made it easier for us to supply at this end, what contributions were needed to complete it.

My sincere thanks are also due for the staunch and unwearied support which I have had in preparing for this meeting, not only from every one of the local orthodontists, but also from the entire membership of the Baltimore City Dental Society. The large committee which was appointed to aid us, has been willing to meet as frequently as necessary, and we believe that its members are prepared to assist us to any required degree in your entertainment. Each of the local orthodontists has made it his business to look after every phase of the work for which he has accepted responsibility. I have perhaps imposed a little more heavily on Dr. George M. Anderson than others, because I got accustomed to asking him to do things, through an association with me of six (no doubt to him) long years.

The local Committee of Orthodontists herewith extends to you a most hearty and fraternal greeting, and begs you to accept the little hospitality offered, and the golf prizes (whichever of you is fortunate enough to win them), as a testimonial of our joint regard for you and the pleasure it gives us to have you here as guests and I am sure the Baltimore City Dental Society entertains the same sentiments. They offer themselves for your entertainment and will devote their time and cars to show you and the ladies who have accompanied you, what they can of the city and its surroundings.

Great Lakes Association of Orthodontists

The next meeting of the Great Lakes Association of Orthodontists will be held at the Book-Cadillac Hotel, Detroit, Wednesday March 13, 1929. An afternoon and evening session has been arranged. All members of the dental and medical professions are cordially invited to attend.

E. N. Bach, Secretary,
Toledo, Ohio.

WELCOME TO THE SOUTHERN SOCIETY OF ORTHODONTISTS*

By J. Ben Robinson, D.D.S., F.A.C.D., Baltimore, Md.

I AM deeply honored in the privilege I have to extend to the Southern Society of Orthodontists a welcome on behalf of the dental profession in Baltimore and Maryland and the people of this community. We are flattered that you should have selected our city as your place of meeting, as it indicates to us the high esteem in which your organization holds those of our members engaged in the practice of orthodontics, particularly the high regard and confidence manifested toward our distinguished confrère whom you have signally honored by electing him president of your society. On behalf of those I represent, I extend to each of you greetings and a cordial welcome, accompanied by our best wishes for a successful and highly beneficial session, as your program indicates you will have.

As we understand the history of orthodontics, its existence as a specialty distinct in dental service based upon the present accepted scientific principles which distinguish it, has been but a brief period as we reckon the age of institutions. While this history has been written in greater part within the past quarter of a century, its achievements have been of a character and to an extent that the pioneers in the art and subsequent contributors to it, might take justifiable pride. Your specialty, through the genius and earnestness of early investigators, received careful and intelligent study, which has resulted in the practice of scientific diagnosis and methodical standardized treatment to the end that the mechanics of orthodontia has developed into a very high art. In fact, to some of us who lack personal participation in the work you do, and who from day to day observe in our routine practice the splendid results you obtain, are so impressed by your skill and accomplishments we instinctively feel that your future holds no further worlds to conquer. But this conclusion is not a true picture. We know you have many problems, many difficulties, perhaps many differences which offer when solved assurance of a better understanding of basic truths and fundamental principles and in their ultimate accomplishment will serve as a token which will be accepted as indicating progress. Recognition of this condition of imperfection and incompleteness of your specialty is cause for this meeting and similar meetings in which are brought together personal thoughts and suggestions which when welded together produce ideas of value capable of further advancing the splendid cause in which you are engaged.

While your progress as a group of specialists has been remarkable and while you are devoting your time to the promotion and consistent development of your specialty, you do not lose sight of the major cause but instead recognize your responsibility to dentistry in its general meaning and with the serious conviction of your duty to the organization as a whole, you are giving willingly

*Delivered before the Southern Society of Orthodontists, Baltimore, Md., April 27, 28, 1928.

and unstintingly toward a solution of the problems which now confront the profession. This is as it should be for without the united support of the strong men of our calling, the constant balderdash of false prophets may work a permanent injury to the present status of our profession and the just obligations of the profession will not find expression in fruitful results.

Dentistry has its faults—many of them; it has been guilty of errors both of omission and commission; it has made many mistakes in the past and will make others—fewer and less important we hope—in the years to come. All this is but evidence of the tremendous effort our profession has put forth to meet its obligations under stress of most exacting demands and in face of failure of other branches of the healing art to lend either aid or sympathy. Dentistry has, however, from the earliest period sought to determine its weaknesses and with wisdom and courage has proceeded to correct its existing faults as changing times have revealed them and advancing science has made possible. To one acquainted with modern dentistry and informed of the vicissitudes of its beginning and subsequent development, there is but one conclusion, which is "It has fought a good fight, it has kept the faith."

Go back with us for a few minutes to those who almost a century ago demanded that the practice of dentistry be reclaimed from its low estate and placed upon a dignified professional plane and a sound scientific educational basis. Witness the difficulties attending the efforts of the two distinguished pioneers of professional dentistry—Hayden and Harris—who in this city eighty-six years ago and within a stone's throw of where you now sit, founded the first dental school in the world as the surest guarantee of professional integrity and scientific health service. They built greater than they dreamed and only because of their high ideals, determination of purpose and eternal vigilance in the interest of a great cause, has their contribution been preserved to the present and has developed into the splendid health service agency which we find in dentistry today. And so from the beginning to the present our profession has ever provided the man to meet the emergencies of the times. In view of the splendid response ever made by the members of our profession to meet the vital problems which have arisen, we are, in the knowledge we have of the present high merit among the leaders of the profession, prompt to declare our faith in them and express our confidence that they will wisely provide for the future with as much credit and glory as their forbears so successfully met the emergencies of the past. The ever-growing demand on dentistry to meet its constantly increasing responsibility in the program of health service has been met quickly and efficiently from within the profession. In fact, it has been prompt to observe developing opportunities and as a consequence, all valuable reforms of whatever character have had their inception and growth wholly among our number. We question any self-appointed Moses who may arrogate to himself the duty to lead dentistry out of the wilderness of misjudged public needs and misconceived policies of dental education and technical training. Any interference from without, or any propaganda from within that has as its object drastic changes of great extent which may threaten the integrity of the institution so ably started and so capably perpetuated, can only result in great

harm, and it is the duty of loyal men of the profession interested in seeing continued onward and upward progress, to give serious consideration and response to all such suggestions.

Among the many pressing public needs none take higher rank than the particular service in which you gentlemen are engaged. You have laid a strong foundation and so far have built exceedingly well. When you shall have progressed to the point where the demand of the public for orthodontic service has been satisfied and the opportunity for further improvement no longer exists, you may rest, but until then you will be expected to continue to improve your specialty and provide for extending the opportunity of your service to the great masses who are so woefully in need of assistance. My observation leads me to the conclusion that your greatest problem is to provide or recommend some plan which will secure orthodontic service to those who because of financial barriers cannot enjoy the blessings you men are today bestowing upon the more fortunate class. We trust that this meeting will be occasion for definite progress in this direction.

Again we bid you welcome. We are happy to have you with us and assure you that the Baltimore City Dental Society is anxious to serve you in every way possible to make your short sojourn with us pleasant as well as profitable. While we are the most northerly point of the geographical region which forms your society, we are still south of the historic Mason-and-Dixon line, by virtue of which, we are one with you as southerners, possessing all the traditional hospitality to which you are accustomed. We hope that the efforts of the Baltimore boys to entertain you will be successful to the point that you will eagerly look forward to another meeting with us at a very early date.

President Kelsey.—The response to Dr. Robinson's very cordial address of welcome will be made by the President Elect of the Southern Society of Orthodontists, Dr. W. B. Childs.

Dr. W. B. Childs.—It is a pleasant duty to be permitted to respond to this cordial welcome. We warmly appreciate your greeting. Surely there can be no city more fitting than Baltimore in which our Society could meet, in view of its historical traditions and the influence that Baltimore has had in the history of dentistry. We are glad to be here in convention and to experience the pleasure of a homecoming.

When we recall the names of those men of our profession who have claimed Baltimore as their home, our hearts are touched with a sincere emotion of pride in the contribution that this city has made to dentistry.

We consider it a happy privilege to come to the home of Hayden, Harris, Baxley and Bond, and all those illustrious pioneers who at a time when dentistry was not sufficiently recognized had organized a separate department of teaching. These gentlemen organized, in the face of great difficulties, an independent profession which stands today in the eyes of the world equal with the parent profession.

We are touched when we recall to memory such beloved men as Drs. Wilder, Foster, B. Holly Smith, Clarence Grieves, and all of the others who

have contributed so much to the scientific knowledge of dentistry. We are glad to come to the home of our beloved President, Dr. Kelsey. We are glad to meet in the home city of your other distinguished citizens and our fellow members, Drs. Leonard, Swinehart and Anderson.

We find your city charming in every respect; your people most hospitable; your attentions and courtesies most delightful. Your sincere words of welcome have struck in our hearts a sympathetic chord. Our deliberations in such an atmosphere of culture, of learning, with interchange of friendships and ideas, will result in our being beneficiaries. I sincerely hope that our deliberations will come forth in the spirit of science and that we may be better prepared to minister to humanity when we leave Baltimore.

I cannot say how much I appreciate the opportunity of being here, and I am sure that this feeling is shared by all of us. If I could express in my humble words the feelings that have been inspired, I would indeed be happy. All that I can say, Dr. Robinson, is that I wish to express to you our sincere thanks for your cordial welcome and gracious hospitality.

A DISCUSSION OF CASES PRESENTING AN ANTERIOR POSITION OF THE MAXILLARY AND MANDIBULAR ARCHES*

By Dr. Winston P. Caine, Chattanooga, Tenn.

I HAVE chosen the above title for the type of case that I wish to discuss in this paper; it may also be described as a bi-maxillary protrusion. When I first began to write this paper, I gave it the title, "A Discussion of Cases Presenting an Anterior Displacement of the Upper and Lower Arches." But then I changed the word "displacement" to "position," to avoid a disagreement with any of those men who might contend that the maxillary and mandibular arches are never both misplaced. The cases that I have in mind are those in which we have a normal cusp relation of the molar and premolar teeth of the two arches as related to each other, but an abnormal position of the arches as related to the face and cranium.

As an example of a case of this kind, let us picture a case of neutroclusion, with no missing teeth, patient about sixteen years of age, in which both arches are as wide as they should be to harmonize with the face of the patient. So we will say from the standpoint of the face as a whole that the arches need no expansion. The maxillary anterior teeth protrude and are too prominent for a nicely balanced face. The mandibular anterior teeth are either bunched in the incisal region or the canines are crowded out of position.

We will not suppose that the position of the first molars is constant, for I do not think that we can say that in all cases it is constant or correct.

*Read before the Southern Society of Orthodontists, Baltimore, Md., April 27-28, 1928.

A condition like the one in question may be caused by the early loss of the deciduous teeth followed by the anterior eruption of the molars and premolars. Or such a condition might be the result of inheritance, present in one or both sides of the family.

A condition causing very much the same appearance in the patient may be brought about by the teeth being too large or containing too much tooth structure for the size of the face and cranium. Some one may say that teeth are never too large to blend in with the features and head of the patient possessing them and that the head will grow to accommodate the teeth. But I feel sure that we as orthodontists do not believe this to be true. I have seen cases in which I have no doubt that the teeth were entirely too large for the face and cranium of the individual. By being too large, I mean that if the teeth were arranged in the proper line of occlusion, they would not be in harmony with the features and appearance of the small face and head of the patient; the arches would be too wide and the anterior teeth too prominent. Considering cases of this type from the standpoint of inheritance, the theory has been advanced that the child inherited large teeth from one side of the family and a small head from the other. But, the father of the child may *not* have large teeth and the mother a small head or vice versa. These characteristics may, however, be inherited from more remote ancestors. Galton's Law of Ancestral Inheritance states that: "The two parents contribute between them on the average one-half of each inherited faculty, each of them contributing one quarter of it. The four grandparents contribute between them one quarter, or each of them one-sixteenth, and so on." The interesting point is that the father and mother each contribute only one-fourth of the inherited characteristics of the child.

I am not going to discuss Simon's method of diagnosis. Dr. Simon may be right. Dr. Dewey says there is nothing new about Simon's method and what is new is incorrect. I do not think that all types of heads and faces can be diagnosed by one standard measurement. Dr. Dewey says it is most difficult to definitely locate points on soft, living tissue. If we could have a normal or perfect head and face and from an orthodontic standpoint, try to make our patients with malocclusions conform to this normal, it would be all right. But, in the correction of deformities of the face and head, orthodontia has its limitations.

When I studied orthodontia, Dr. Joe Eby was an instructor in appliance technic. He often used this expression, "Now, your eye will tell you so and so." So in orthodontia, as I see it, an orthodontist must depend upon his eye to tell him lots of things. If his eye does not tell him many things as to facial contour and arch predetermination, he is lacking a very necessary asset. With the aid of his eye and the sense of touch, he should also be able to determine the approximate amount of pressure exerted by a finger spring without the use of a recording instrument.

In the Dewey Course in orthodontia, Dr. Dewey gave several lectures on art and architecture. At that time, I thought that he had got way off the

subject of orthodontia and teeth; but later on I changed my mind. Art and architecture go hand in hand and form a very essential part of orthodontia. Orthodontia is art.

In Dewey's orthodontia he says something to this effect: "For after all, it is a difficult matter to describe a beautiful face, for beauty is a matter of education." Every orthodontist has to decide for himself what he considers a well-balanced or beautiful face and with this in mind, try as best he can to make malocclusions and malformations conform to this conception. But he must further decide what he considers a well-balanced face for the patient in question. From the standpoint of teeth, orthodontia has two main objects, namely, efficiency and esthetics. Teeth should be arranged to obtain masticating efficiency and the best possible esthetic effect.

The personal equation comes here in orthodontia, for it is necessary for each orthodontist to determine his plan of treatment. He must determine for himself as to whether he thinks it best for the patient's appearance and masticating efficiency to retain all the teeth and have extremely wide arches and prominent anterior teeth or do some extraction and reduce the amount of tooth structure and the anterior prominence.

Now as to the plan of treatment of the case described in the first of this paper; we have assumed that the case needs no expansion and is a case of neutroclusion. Our objective in treating it is to get rid of the prominence of the maxillary anterior teeth and the crowded condition in the mandibular anterior teeth. To obtain this result we will have to move all the teeth in both arches distally or posteriorly or we will have to move the anterior teeth in the mandibular arch forward to overcome the crowded condition there and attempt to line up the maxillary anterior teeth with the mandibular anteriors.

It might be possible for some orthodontists to move all the teeth in both arches posteriorly after the second molars have erupted and the third molars are fully formed, but personally I do not think that I can do it successfully. If the mandibular anterior teeth should be moved forward or the maxillary anterior teeth left as far forward as they are, I think the appearance of the patient would not be very pleasing. So under the conditions that I have attempted to describe in this case, I think the extraction of four first premolars would be the best plan of procedure. After the extraction of these teeth, we would move the anterior teeth distally and close up the spaces where the teeth were extracted.

From my short experience in orthodontia, I admire very much the man who can correct all types of malocclusions and obtain permanent results and good appearance without the extraction of teeth. But I think that the wise extraction of teeth in certain types of malocclusions is good orthodontics. I think that extraction is also indicated in cases where there are very large teeth with a marked crowded and lapped condition, with a small head and face. The extraction in such a case would usually be the first premolars, depending on the case. I think it would be much better orthodontics to extract some teeth and get permanent results rather than to attempt to make both arches extremely wide and run a very great risk of a collapse of the case and a partial return to the former malocclusion.

DISCUSSION

Dr. J. E. Brown, Mobile, Ala.—I am glad that Dr. Caine selected for his paper the subject he did, because we all have such cases in our practices—and have our troubles with them.

Such cases are not only hard to properly diagnose when presented with seeming normal cusp relations in the premolar and molar regions, but at times, after obtaining apparently normal molar cusp relations for older patients with posterior occlusion—especially where there has been much protrusion and a long period of mouth breathing—there is still a prominence of the teeth that would indicate an anterior position of the arches.

It seems to me that such cases call for a check by some method other than Angle's. Dr. Simon and others are working on this and I sincerely hope an accurate method may soon be worked out without too complicated apparatus. But I agree with Dr. Caine in that I do not think this has yet been worked out accurately. This leaves us the choice of determining the amount of misplacement in these cases by checking up from landmarks that we think are out of the normal position, or of using external points, or landmarks, that hardly any two men would select identically, or which may be out of position themselves.

The essayist calls attention to the fact that the case he used for illustration apparently needs no expansion of the arches. May this not be true of the anterior portion of the arches without holding true for the posterior? I believe that one of our troubles in some cases that do not satisfy us from the esthetic standpoint after we have apparently normal cusp relations is that we may have attempted to mould these cases to a certain more or less fixed arch.

Now we know that there are three distinct types of teeth with the corresponding three types of arches—the square, angular, and oval. The orthodontist must truly have artistic judgment as well as mechanical ability. To say nothing of the appearance resulting from aligning ovoid type teeth to a square shaped arch—or any but an oval arch—nature as a rule makes some effort to correct our mistake and we find the supposedly finished case slipping. Is it not possible that some of our problems in retention may be solved by determining the type tooth and the facial type and planning to shape our arches accordingly? It strikes me that some cases of seeming protrusion or of flatness across the front of the mouth may be due to failure to consider this fact.

Attention was incidentally called to those mouths where the teeth appear too large for the face and cranium. Of the few cases of this kind that have come under my limited observation I also thought, perhaps wrongly, that some seemed too prominent by being anteriorly situated. Personally I have had more cases where the teeth were too small for the face and jaws. These cases do not look pleasing or natural when adjusted so that there are no spaces between the teeth.

The plan to extract premolars in those cases with anterior positions of the arches in my opinion is the logical treatment— especially where we are working on patients over fifteen. I also believe in extracting two premolars in the displaced arch where we have these cases presenting only anterior displacement of the maxillary or the lower arch in these older patients. Up to the last few years I have often made the remark that it should not be necessary to remove permanent teeth where there was no other mutilation. But, after observing some of the supposedly finished cases where I had not extracted and had succeeded in obtaining fair cusp relations (for a while) I have certainly been converted, and heartily agree with the essayist.

Dr. John V. Mershon.—Mr. President, I think there is one thing that orthodontists have failed to realize and that is the fact that there is a limit to what we can accomplish.

In reference to those overdeveloped maxillary and mandibular jaws with protruding teeth; there is too much mouth, and if you will make the same examination of the rest of the human organism, of just as many cases, you will find that you have other inequalities.

I happen to know a shoemaker in New York City who makes shoes for me. The principal business of this shoemaker consists in making shoes for people whose feet are

above or below what the average ready-made shoe will supply. He showed me some of these shoes that he was making, which looked just as much out of proportion as compared to the average shoe as these particular mouths do, to which you are referring.

Again coming down to the question of correcting these cases, we certainly cannot correct them in the feet. We all see hands abnormally large, which cannot be corrected. The question in my mind is whether you have improved the condition if you do extract the teeth. Extracting of teeth means a good deal more, I think, than we have realized in the past. I am certainly not an extractionist. I am not saying that I do not and would not extract under certain circumstances, but when we undertake to establish formulas for faces, we are going to have difficulty.

Dr. Henry C. Ferris.—Mr. President, I agree with Dr. Mershon. I would like to ask the essayist what he thinks is the standard of measurement? To illustrate my point, if you take a child of twelve or thirteen years of age, the finest artist that you know, even if you offered him an attractive fee, could not paint that child's face as it will appear at maturity. I doubt if you could get such an artist to take such a contract. The limit of nature's development is beyond any artist's ability to measure either by eye or mental conception. So that when we make our diagnosis of double protrusion at an age of thirteen or fourteen, we have little or no conception of what nature will do in the structural foundation which supports those teeth. If you put the teeth in their functional activity and stimulate their function to the maximum, you will be surprised what you can do in the perfection of that face.

I think we make our diagnosis on the wrong basis if we assume to claim that the normality of the face at that age will be maintained at the completion of our operation. If we remove those teeth, we immediately break up all possibility of nature's attempt to correct that condition of protrusion.

I have extracted teeth in two cases, in over twenty-three years of practice of orthodontia, and I extracted those teeth over five or six years of operations, so I would caution the men who are extracting teeth over one or two years of a child's life that they cannot possibly expect a perfect result at maturity.

Dr. Ira B. Stilson.—Mr. President, I do not like to say anything because I do not know anything, but when this question of double protrusion comes before us, as it does so often, I always think of the pictures in Angle's "Malocclusion," seventh edition, where in the chapter on "Art" we have the face of Apollo and over on the other leaf we have the face of an Indian chief; then we have the face of an actress, a beautiful face; then we have another Indian chief, a big, heavy fellow with a double protrusion, if you please. Could we by orthodontic treatment make the face of Apollo look like the big Indian? Could we make the big Indian look like Apollo? And if we could, would we improve either of them?

Dr. C. A. Hawley.—There is just one point in this on which it seems to me we are going far afield. This paper presented a picture which is very common, and I admit that the standards of beauty are very evanescent; each person has a different conception of beauty, perhaps, but still this question presents itself: Here is a person—and I assume at maturity because I think we should not do these things until the time for development has passed—whose face, in the opinion of the majority of the friends of the patient, is disfigured. These friends may all be mistaken, but I think they rarely are. Here are faces, treated by orthodontists, myself included, in the days when we thought that every tooth must be present, which in the opinion of all their friends is a failure. Their teeth are too prominent and they speak of them a good deal as this doctor in New Orleans who refers to them as "gorilla mouths." In the opinion of all their friends, they are too toothy. Now, if by extracting four of the premolar teeth—and that must be followed by an accurate and exact technic these spaces are closed, and closed without moving the molars forward—

Dr. Mershon (Interposing).—Can you do it?

Dr. Hawley.—Yes sir, I can do it, and I can prove to you that I can do it. I am not prepared to do it today because I did not expect this question to come up. After that operation the efficiency of the mouth is perhaps slightly impaired from the standard ideal occlusion, but the efficiency of the denture is sufficient to meet the demands of civilized life, and in the opinion of all this patient's friends, the patient is very much improved. In that event, I think the operation is allowable and it is a sensible one and one that brings you more credit than to let this patient go through life disfigured.

President Kelsey.—If there is no one else who wishes to discuss this paper, we shall ask Dr. Caine to close the discussion.

Dr. W. P. Caine.—I really wanted to get some of the older men's ideas about these cases. They have been worrying me and I appreciate the discussion of you all.

The case that I have in mind is one that I have treated myself and the arches seemed to be plenty wide enough to me, but I can readily see that even if they were wide enough, if the teeth were shifted forward, that this crowded condition would have to take place somewhere, and as the back posterior teeth come forward, if the mandibular anterior teeth do not come forward, they are going to bunch right there. I have the models of that case, if you care to see them.

I appreciate what Dr. Hawley said about that. That is just the idea I had. The point I wanted to make was that after all it is up to a person to decide himself what he thinks is the best type of treatment. For instance, a Chinese face, always appears to have protrusions; that is, it seems to me that all the Chinamen I saw had protrusions and to me personally, their faces are out of harmony. As to whether it would be well to treat all those Chinamen or not, I do not know. All the Chinamen I saw looked as if they had adenoids and they were mouth-breathers. Most of them are in the South, so I do not know about all of the Chinamen but those are the ones that I have seen.

American Dental Association

The Seventy-first Annual Session of the American Dental Association will be held in Washington, D. C., October 7, 8, 9, 10, and 11, 1929.

Harry B. Pinney, Secretary,
58 East Washington Street,
Chicago, Illinois.

American Dental Assistants Association

The Fifth Annual Meeting of the American Dental Assistants Association will be held in Washington, D. C., October 7-10, 1929.

Ruth F. Rogers, Gen. Secy.
Suite 803, 223 W. Jackson Blvd.
Chicago, Illinois.

THE OPERATIVE LENGTHENING OF THE LOWER EXTREMITY*†

By Leroy C. Abbott, M.D., C. H. Crego, M.D., and A. O. Adams, M.D.
St. Louis, Missouri

ONE of the most difficult problems with which the surgeon is confronted in the treatment of crippled children is an extreme degree of shortening of one of the lower extremities. This shortening produces a marked limp, a downward tilting of the pelvis and a postural curvature of the spine, all of which may lead to serious disability.

The application of a lift to the shoe in such cases is objectionable, for its height alone is unsightly and its weight is often a source of marked discomfort. This is particularly true in extensive paralysis of the limb due to anterior poliomyelitis, and many patients so afflicted discard the lift as awkward and cumbersome and prefer to walk with crutches.

Other methods of treatment which have been used are stimulation of growth at the epiphyses and operations on the bones which aim either at shortening the sound leg or lengthening the shortened leg. The first method has generally failed to give good results while the latter has not been reported in any large group of cases. A review of the literature, however, does show that leg shortening and leg lengthening operations have been attempted with varied degrees of success.

One of the best articles on the subject of operative lengthening of the long bones was published by Putti in 1921. This article was based on the results secured in ten cases where the shortening was due to malunited fractures of the femur. Putti's method of operative lengthening consisted of division of the shortened bone and the application of traction by means of steel pins inserted into the upper and lower fragments. The instrument used to secure traction consisted of a telescoping tube in which was contained a strong spring pressed by a screw. The extremities of the tube were fastened securely to the pin ends. The important principles which Putti emphasized were that in order to secure lengthening of a bone, traction and counter-traction must be applied directly to that bone. Furthermore, that in order to overcome the elastic resistance of the soft parts the traction force must be continuous and elastic in type. It might be added that only by a slow and continuous type of traction can we gain sufficient length to be of practical value without serious danger of injury to important blood vessels and nerves.

Our own work on the operative lengthening of the long bones began over three years ago. The failure to secure satisfactory results by conservative measures in several cases where the shortening in the tibia and fibula was marked led to the development of the operation for lengthening of these two bones. Our method was based on the fundamental principles of traction and counter-traction emphasized by Putti. One feature of his work to which we gave considerable

*From Shriners' Hospital for Crippled Children, St. Louis, Mo.
†Read before the American Society of Orthodontists, Buffalo, N. Y., April 30 to May 2, 1928.

thought was that in all his cases union was somewhat delayed. Was this because a long time was required for the formation of sufficient callus to fill in the gap separating the fragments? Did not lack of apposition and accurate contact of the fragments contribute to further delay in the union? Certainly in similar conditions, such as fractures with wide displacement of the fragments, we do note a tendency toward a condition of delayed or non-union. In an operative lengthening we have in reality created a fracture by osteotomy and the reaction and repair should act in exactly the same way as in a fracture occurring through accident. The basic principles of treatment, therefore, must be the same for both conditions, namely, the maintenance of accurate contact and alignment.

With these fundamental principles in view it seemed highly desirable to employ an apparatus which would combine all the advantages of Putti's osteoton but would, in addition, maintain contact and alignment of the fragments. We argued, therefore, that if an equal traction force was maintained on both sides of the leg, lateral tilting of the fragments would be prevented while good alignment in the anteroposterior plane could be secured by the use of what has been termed "stabilizers." The description of the apparatus can best be given under the following headings:

1. Two steel drills.
2. Two screw extension pieces.
3. A supporting splint and stabilizers.

The drills are made from drill rods each 9 inches in length and from one-eighth to three-sixteenths of an inch in diameter. They have very sharp drill points so that they will readily engage in the cortical bone, while the opposite ends are squared off to fit in the ordinary drill chuck. These specially constructed drills are turned through the bone and left in place for attachment to the extension pieces. By the elimination of preliminary drilling of bone trauma to tissue is minimized and the risk of infection is proportionately diminished.

Two screw extension pieces are essential in order that traction may be applied to both sides of the leg. These extension pieces consist of telescoping tubes, the ends of which fit over the projecting pins. Each has a fixed and movable flange between which is mounted a steel coil spring. By tightening the movable flange the spring impinges on the fixed flange thereby increasing the length of the telescoping tube. As the telescoping tube increases in length the pins to which it is attached spread apart producing a corresponding separation of the fragments and therefore an actual increase in the length of the bone.

While these screw extension pieces control lateral deviation of the fragments they do not prevent their displacement in an anteroposterior direction. For this some form of apparatus to hold the pins in the same horizontal plane is necessary. This control is secured by supporting the limb on a Thomas splint to the side bars of which four turnbuckles are attached by adjustable metal cylinders. The upper screws on these turnbuckles have loops which fit over the ends of the pins. By loosening or tightening a turnbuckle the individual pin to which it is fastened can be moved upward or downward as desired. With each tightening of the thumb screws on the extension pieces the pins have

a tendency to tilt and throw the fragments out of alignment. By adjustment of the four turnbuckles the pins are maintained in the same horizontal plane and thereby prevent any tilting of the fragments in an anteroposterior direction (Figs. 1, 2 and 3).

The apparatus for the femur differs somewhat from that used for the tibia and fibula. In the femur the upper pin ends are fixed directly to the supporting splint. The lower pin ends are fixed to two turnbuckles which in

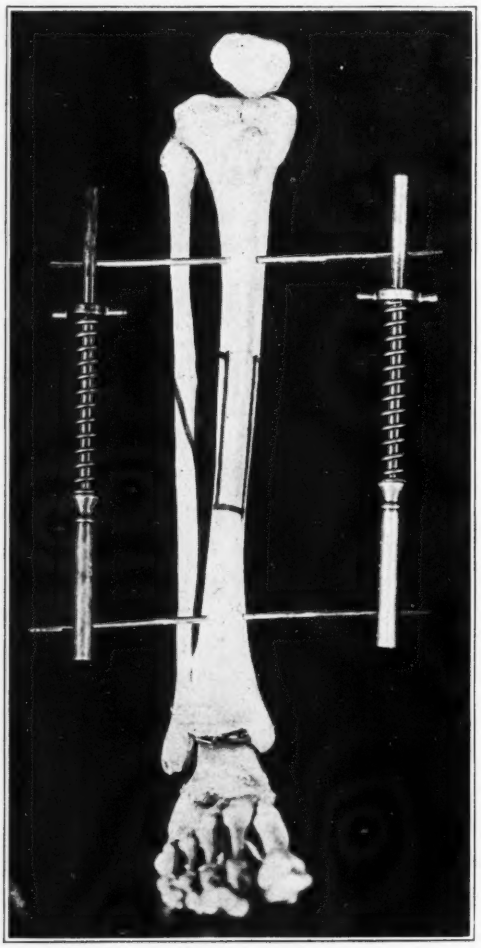

Fig. 1.—Pins inserted in tibia with screw extension pieces attached. Note marking indicating the method of sectioning tibia and fibula.

turn are fastened to the supporting splint. Additional control of the fragments in an anteroposterior direction is secured by a knee flexion piece which is readily adjusted during the lengthening process (Fig. 4).

DESCRIPTION OF THE OPERATION

As the basic principles for lengthening of the femur and lengthening of the tibia and fibula are the same and differ only in technical details, it is deemed sufficient here to give a brief description of the steps of the operation for lengthening of the tibia and fibula.

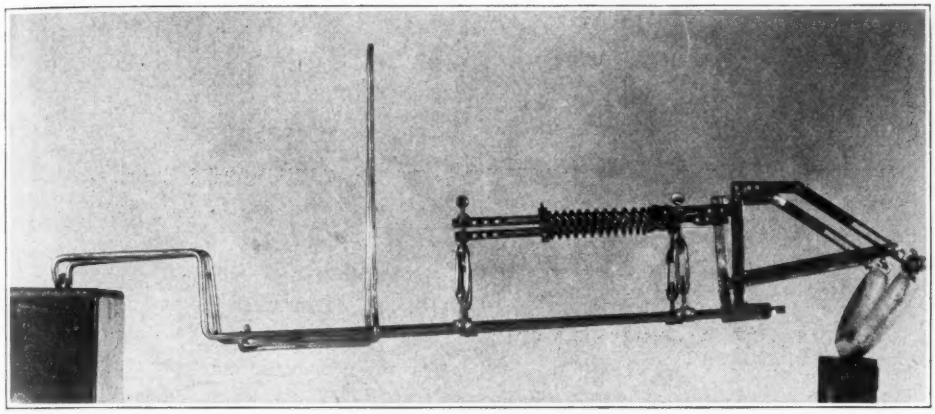

Fig. 2.—Apparatus for control of fragments and support of the leg in lengthening of tibia and fibula.

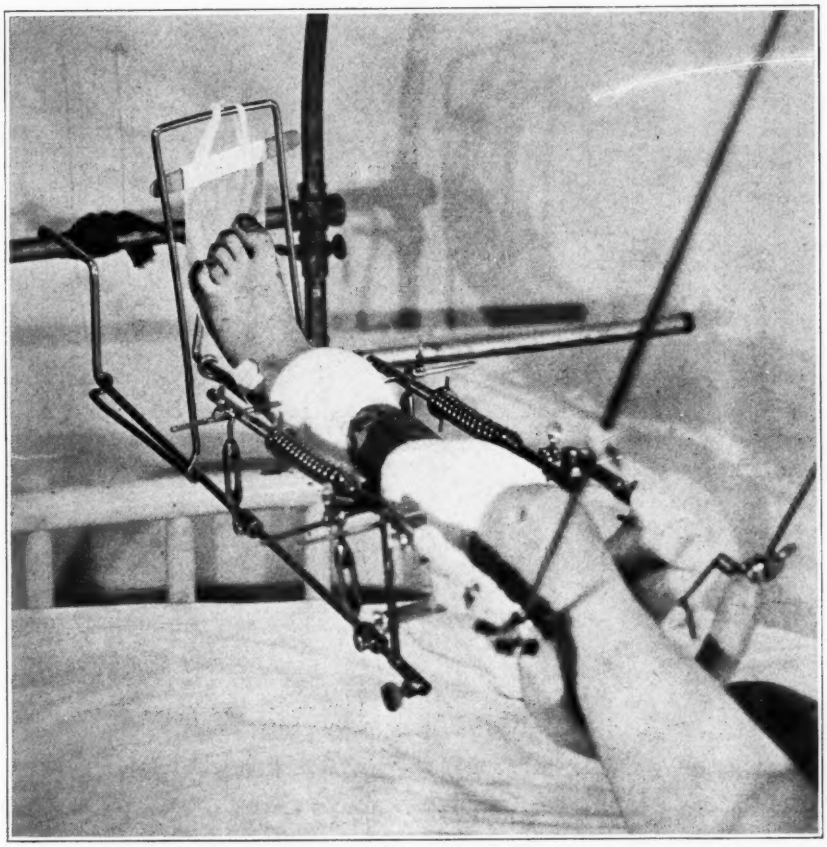

Fig. 3.—Apparatus applied in operative lengthening of tibia and fibula. Note screw extension pieces and the control secured by four turnbuckles fastened to the pin ends.

After a forty-eight hour preparation of the skin of the foot, leg and thigh the patient is anesthetized and a tourniquet applied above the condyles of the femur. The skin of the lower thigh, leg and foot is painted with 70 per cent alcohol and sterile drapings are applied.

The various steps of the operation are carried out in the following order:

1. Lengthening of the tendo Achillis.
2. Osteotomy of the fibula.
3. Insertion of the drill pins.
4. Osteotomy of the tibia.
5. Application of splint and turnbuckles.

We have found that it is best to lengthen the tendo Achillis as it offers great resistance to the lengthening of the bone, and if it is not divided the

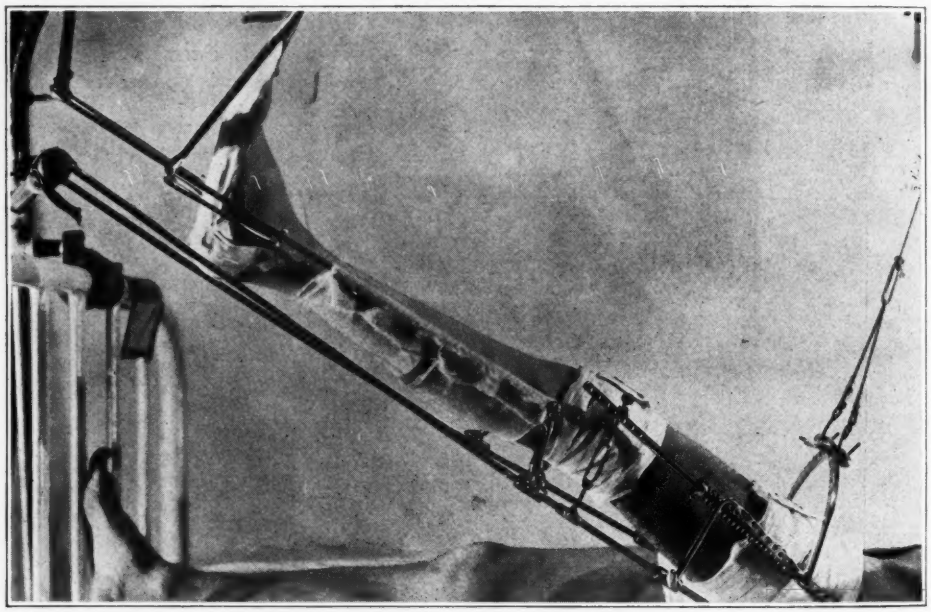

Fig. 4.—Apparatus in operative lengthening of the femur with turnbuckles for the lower pin and knee flexion piece for control of the fragments.

foot is forced into equinus. The tendon is therefore lengthened in all cases except where it is not already stretched by paralysis.

At the junction of its middle and lower thirds the fibula is exposed by a short incision which is placed in front of the peroneal tendons. The bone is divided obliquely so that the actual separation of its fragments produced by the lengthening will be reduced to the minimum.

The pins are inserted at the upper and lower ends of the shaft of the tibia through stab incisions which pass through the soft parts directly to the bone. They are then turned through the bone and made to emerge on the opposite side of the leg through a counter-incision in the soft parts. The screw extension pieces are now applied to the pin ends.

A gentle curved incision, 5 inches in length, is then made over the antero-lateral aspect of the middle third of the tibia. In order to minimize the injury to the circulation of the periosteum this incision is carried down to the bone without dissection of the soft parts. With a sharp elevator the periosteum is

separated from the entire circumference of the bone for a distance of 4 to 5 inches. With a motor saw two parallel cuts, 3½ to 4 inches in length, are made in a vertical direction at the middle of the inner and outer surfaces of the bone. These cuts are joined at their upper extremities by a transverse section through the posterior cortex; at their lower extremities by a transverse section through the anterior cortex. This provides a long tongue of the lower fragment which lies behind the long tongue of the upper fragment. This permits of

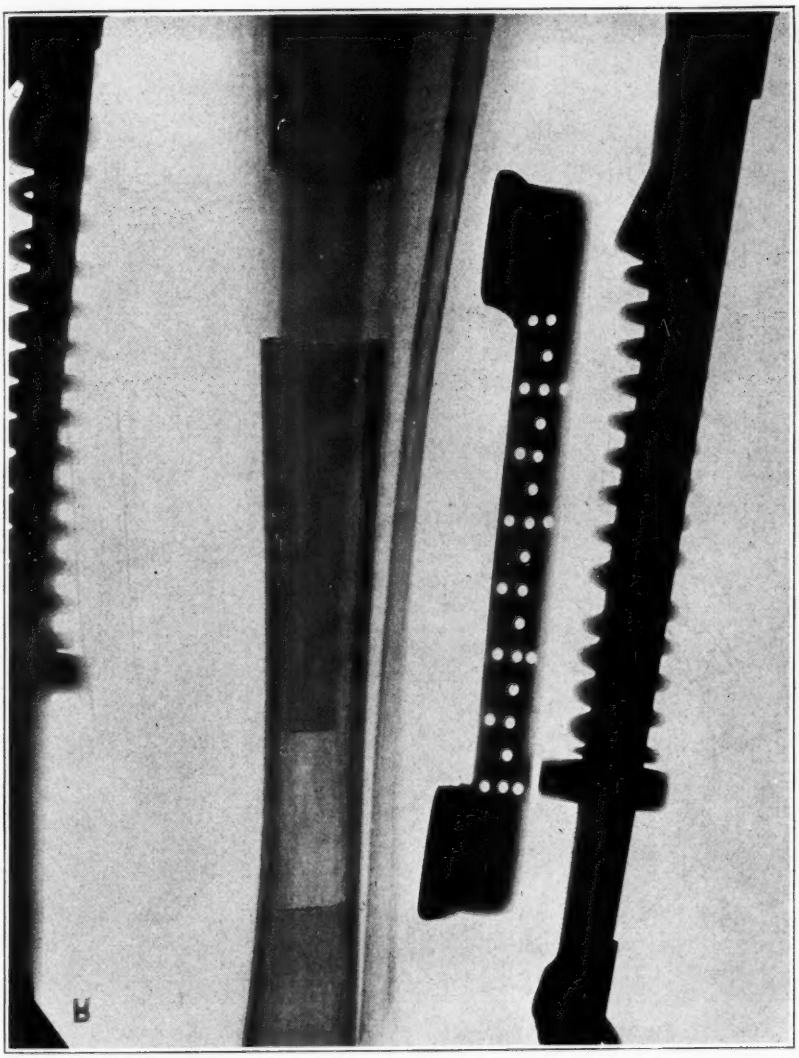

Fig. 5.—Case C. B., a boy aged eleven years, with two inches of shortening due to infantile paralysis. Anteroposterior roentgenogram taken two weeks after lengthening process was begun. Note the one inch gain in length, the excellent alignment of fragments, and the early formation of periosteal callus.

contact of the fragments during the lengthening procedure and reduces the space to be filled by callus to a minimum. At the middle of the wound the periosteum is incised transversely from its inner aspect, for in this manner we disturb as little as possible its blood supply from the surrounding soft parts. The wound is now closed in layers and at its upper end a small rubber tissue drain is inserted. This drain is employed to prevent postoperative swelling.

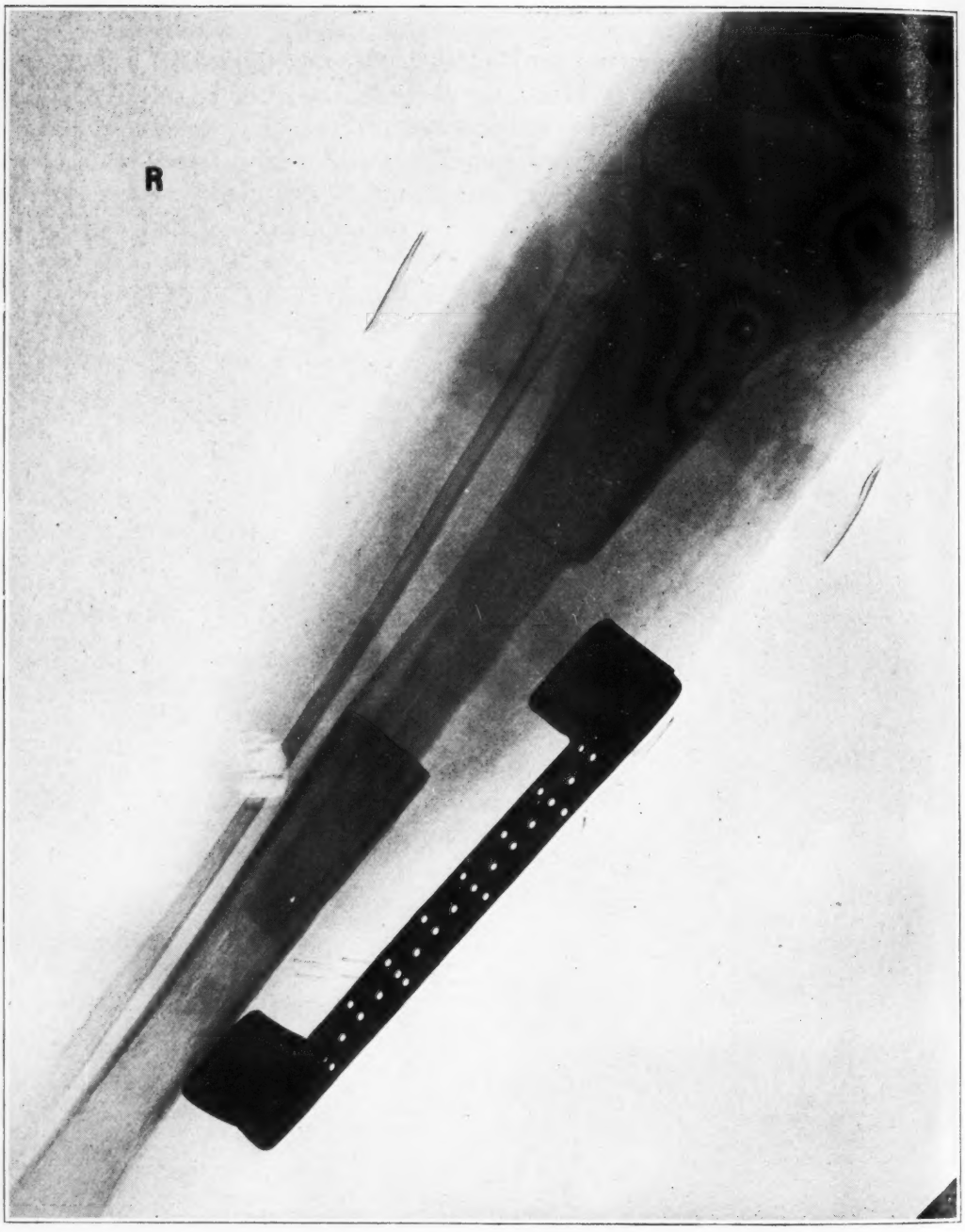

Fig. 6.—Case C. B., anteroposterior roentgenogram taken eleven weeks after operation. There has been a gain of two inches, the fragments have been maintained in perfect alignment, and there is well-marked callus formation.

The supporting splint is now applied and the upper ends of the turnbuckles are fastened to the projecting pin ends. The patient is transferred to his bed with the lower end of the splint elevated and fixed to an overhead bed frame. This elevation is essential in the prevention of postoperative swelling.

THE POSTOPERATIVE LENGTHENING OF THE LEG

No attempt is made to begin lengthening of the leg until all swelling has disappeared which is usually at the end of the first week. The drain is re-

moved in forty-eight hours. Daily inspection of the leg under aseptic precautions is carried out in order to prevent projection of the fragments against the skin.

The beginning of leg lengthening is brought about by tightening the thumb screws on the extension pieces an equal number of turns on the two sides. The measurements taken between the ends of the pins on each side of the leg are then recorded. On the second day a few more turns will cause a little more separation of the fragments and again the measurements are carefully recorded. The average daily gain is from one-sixteenth to one-eighth of an inch and the entire time of traction is about four to five weeks.

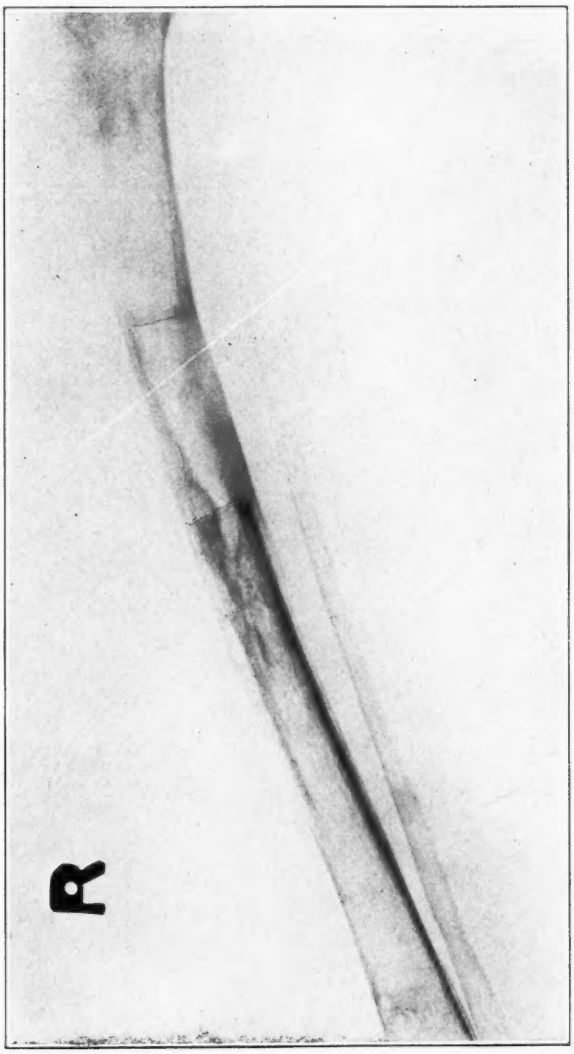

Fig. 7.—Case C. B., lateral roentgenogram taken four and one-half months after operative lengthening of the tibia and fibula. Solid callus has completely filled in the operative defect. The space between the black lines indicates the site of the two inches gained in length. Both pinholes are healed. The oblique osteotomy of the fibula in the lower third does not show plainly in the anteroposterior view because of overlapping of the fragments.

To provide a check on the measurements roentgenograms are taken at weekly intervals. These roentgenograms also give us accurate knowledge regarding the position of the fragments (Figs. 5, 6 and 7.) With the actual

increase in the length of the leg the fragments are almost certain to tilt in an anteroposterior direction, and if not carefully guarded against, injury to the soft parts may occur and the wide separation of the fragments may bring about a condition of delayed union. The prevention of this separation of the fragments and the maintenance of accurate alignment is secured by the adjustment of the turnbuckles. The control of each pin end by a separate turnbuckle permits of maintaining the two pins in the same horizontal plane and thereby provides an accurate means of control of the fragments.

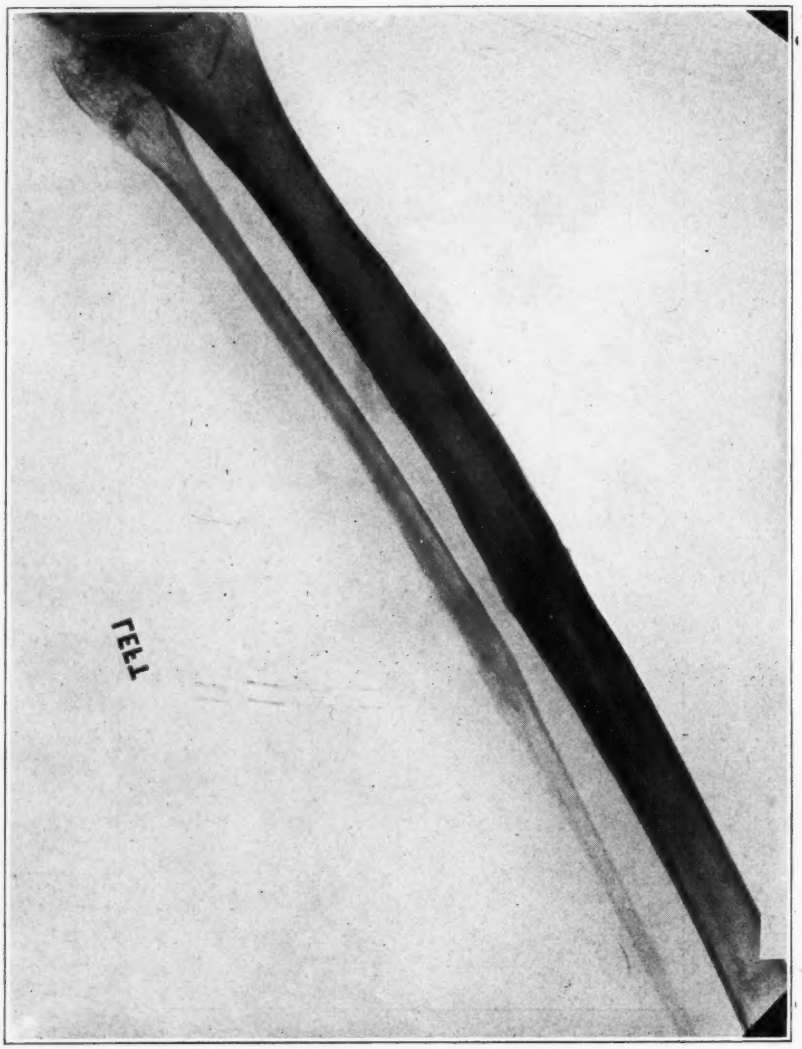

Fig. 8.—Case D. T., a boy aged fourteen years, with two and one-half inches of shortening due to infantile paralysis. Roentgenogram taken fifteen months after operative lengthening of the tibia and fibula shows compiete restoration of the medullary canal of the tibia, solid union of the fibula, and complete healing of the pinholes. A gain of two and one-half inches was obtained.

The apparatus remains in place from eight to ten weeks when it is removed and the limb placed in a plaster of Paris cast. This cast is bivalved so as to allow for dressing of the pin wounds. In removing the apparatus it is absolutely essential that the pins and the pin wounds be carefully cleansed with alcohol and some antiseptic solution.

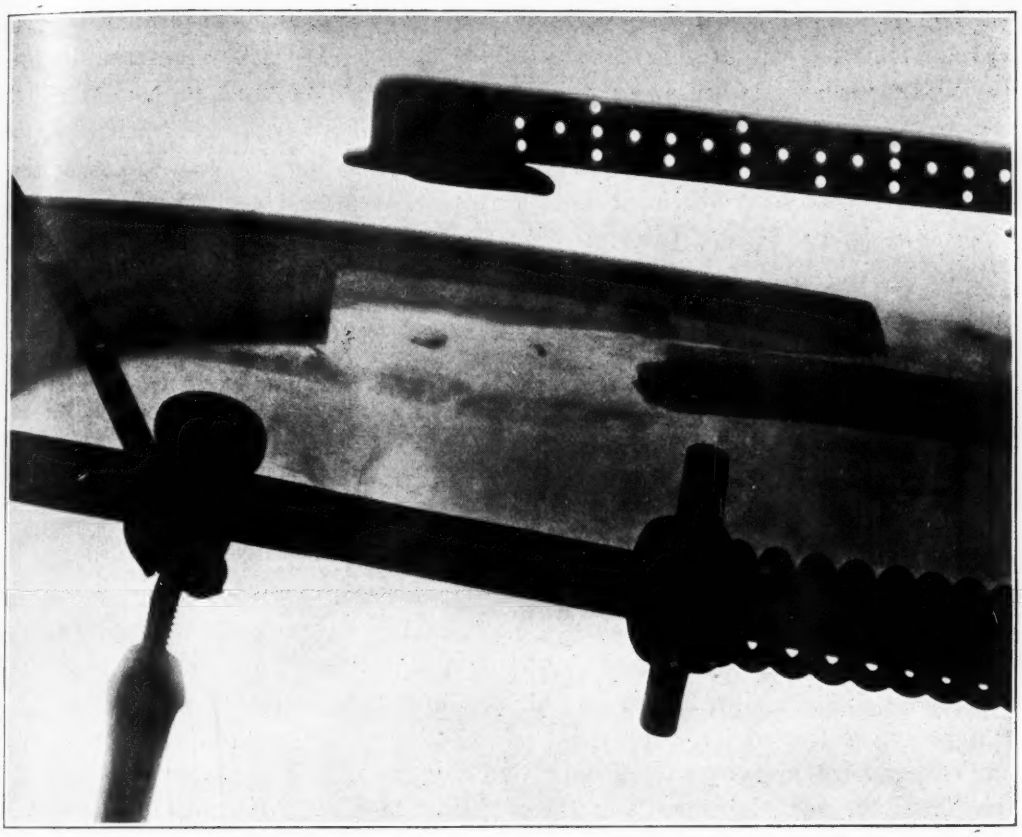

Fig. 9.—Case A. H., a boy aged sixteen years, two and one-half inches of shortening due to infantile paralysis. Roentgenogram taken nineteen days after beginning the lengthening of the femur. There is a gain of two inches. The fragments have been maintained in accurate contact and there is early production of periosteal callus.

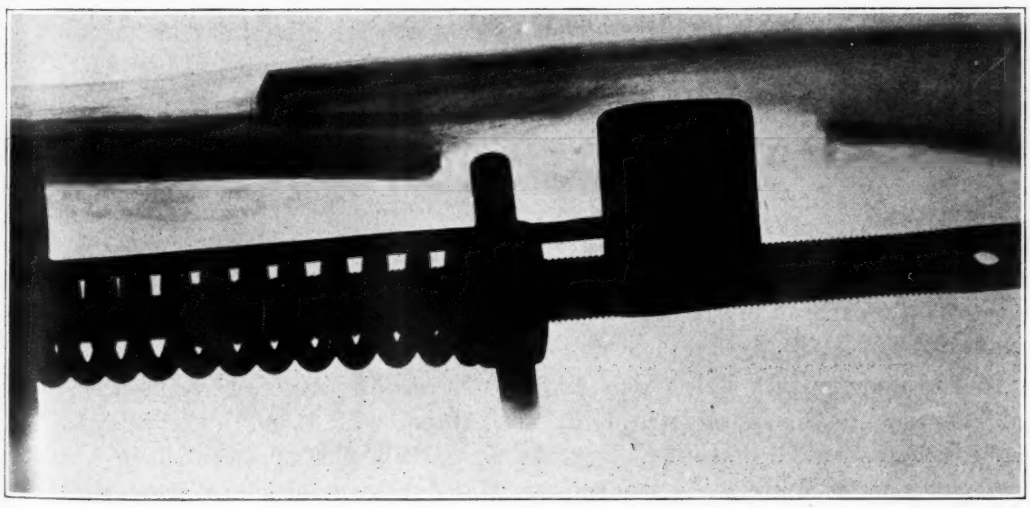

Fig. 10.—Case A. H., roentgenogram taken eight weeks after starting the lengthening process. A gain of two and one-fourth inches has been secured and there is abundant callus, both periosteal and endosteal.

After removal of the pins roentgenograms are taken at intervals of two to three weeks to show the amount of callus uniting the fragments. (Figs. 6, 7, 9 and 10.) From four to five months after operation sufficient callus is

usually present to permit the patient to walk with a support provided by a Thomas walking caliper splint. This splint is worn for two months and then gradually discarded. In every case treated by this method callus has filled in the space lying between the fragments in a comparatively short time. This emphasizes the importance of maintaining control of the fragments during the lengthening process. Otherwise delayed union is almost certain to occur the same as it would in any fracture with malalignment or displacement.

RESULTS

The operation has been performed in 35 patients. In 20 the tibia was lengthened and in 15 the femur. Eight of these patients have been operated on too recently to permit of drawing definite conclusions. Of the remaining 27 the maximum gain in length in the femur was 3½ inches, the average gain 2½ inches. The maximum gain in the tibia was 2⅝ inches, the average gain 2 inches. The oldest patient operated upon was sixteen years of age, the youngest ten. Union of the fragments sufficient in amount to permit of weight bearing with a caliper splint was present in all the cases from the fourth to fifth month after operation. Consolidation of the callus has taken place in an average of six to seven months from the date of the operation.

At no time have we noted any change in the sensation of the skin of the foot or leg as tested by pin prick. Furthermore, the stretching process has not caused any apparent change in the circulation. The wounds caused by the pins have healed properly in the majority of cases. In some, due to failure to pull the skin toward the middle of the limb when the stab incisions were made, there has been some sloughing which required considerable time to heal. In a few cases sinuses have developed at the site of insertion of the pins and we have noted that this occurrence is probably due to the pin having passed through cancellous bone. The force exerted during traction has caused a very definite pressure necrosis. This has brought about considerable delay in healing of the wound and should be a warning not to apply the pins through cancellous bone.

THE SELECTION OF CASES AND DISCUSSION OF THE PROCEDURE

The operation has been performed in patients where the shortening was due to infantile paralysis and tuberculosis of the knee or hip. In all instances the cases have been subjected to this operation because the more conservative measures have not given the desired result.

The manner in which union takes place at the site of lengthening is one of interest and considerable practical importance. Here our observations have led us to conclude that providing the fragments are maintained in contact and accurate alignment, union can be confidently expected in from three to four months; that is, in this time the spaces produced by the lengthening process will be filled in with a soft and pliable callus as noted by the roentgenograms. With partial weight bearing consolidation of this callus will take place in from six to seven months. Complete remodeling of the bone at the site of lengthening with restoration of the medullary cavity has been frequently observed in from twelve to eighteen months after the operation.

Unfortunately, for our knowledge of the process of union we have been dependent entirely on the interpretation of the roentgenograms. As it is obviously impossible to duplicate this operation in animals we have no gross specimens nor have we been able to study microscopic sections. As far as we can judge from the roentgenograms, union takes place very much the same as in the ordinary fracture except that the distance to be spaced by the callus is much more extensive. In the earliest roentgenograms callus is observed beneath the periosteum directly across the bony gap. In addition, there is some callus formation from the endosteum of the marrow as a number of the cases show a hazy, opaque mass joining the adjacent parts of the fragments. Furthermore, there appears to be some callus formation occurring early in the course of the union just at the ends of the bone fragments. The callus from the various sources finally becomes continuous and completely fills the space between the fragments. It would appear that the major portion of the callus is formed from the periosteum. The gradual consolidation of this callus with final restoration of the medullary cavity can be observed in the photographs (Fig. 8).

As these operations were performed in children during the growing period another point of interest is the possible effects that this operation might have on the growth of the bone operated upon. Would the disproportion in the rate of growth in the lower extremities remain the same after operation and thus produce a further shortening of the affected leg? In cases where either the bones of the thigh or leg are lengthened and have been observed over a year or more following operation the rate of growth of the affected side has been the same as the rate of growth of the normal side. In other words, the gain in length of the two sides during growth has remained equal and in some cases the increase in height has been as much as four to five inches. It would seem that the better function secured by lengthening of the short leg increases its rate of growth and therefore prevents any further shortening. This certainly has been true in the cases observed over the one, two and three year periods. Our observations, however, have not been carried out in a sufficiently large group of cases nor over the length of time required to warrant final conclusions.

It is of the greatest importance to point out here that the operation of leg lengthening is one of considerable magnitude. The multiple incisions, the wide exposure of the bone and the penetrating pin wounds are all grave sources of danger, especially in regard to infection. No one can safely predict the outcome in case of infection, especially if the infection occurs in the medullary cavity of the bone. We have had one such case in an operative lengthening of the tibia which resulted in a definite though well localized osteomyelitis. We were able to clear up the infection and gain 2 inches of length, but in other cases we might not be as fortunate. It goes without saying, however, that no one should attempt this operation who is not certain that he can maintain the rigid, aseptic technic which is so essential in bone surgery. It has been our custom to consult the parents regarding the advisability of this operation, fully explaining to them the dangers to which the child is to be subjected and emphasizing especially the risk of infection. With such an understanding on the part of the parents and with adequate indications for the operation, we have been ready to proceed.

A second point of importance in regard to this procedure is that no one should undertake it who is not thoroughly drilled in the use of mechanical appliances. The surgeon who has not the time to give for daily adjustment of the apparatus should leave it entirely alone. It is quite impossible for him to carry the procedure through to its successful conclusion unless he can give it adequate time and has a full and complete understanding of the mechanical principles. Cases should be very carefully selected and the procedure should be reserved for those who are actually in need of it—those who cannot be relieved by mere conservative measures.

DISCUSSION

Dr. Martin Dewey, New York City.—This paper is extremely interesting from a scientific standpoint and I think equally from an orthodontic standpoint, if you can get the practical application of what Dr. Abbott has been doing with the growth and development of bone.

You know we have always contended that bone developed as a result of functional activity. He called your attention to the fact that in all the operations where the bone had been lengthened the contour of the bone was reestablished in a short time along with the reestablishment of the medullary canal.

A short time ago in hearing a discussion of a paper by Dr. Brown, of El Paso, Texas, he cited other striking examples along the same line dealing with the question of transplantation and replantation of bone. In one case there was an injury where it was necessary to take a large part of the fibula of one leg and transplant it to the femur of the other leg. The transplanted bone was reshaped by function and assumed a form which was different from the original.

Years after the large implantation operation, the man suffered an injury and broke this transplanted bone, which made the same recovery as any bone. Transplanted bones have grown the same as nontransplanted bones, which shows the importance of continual functional activity.

Your attention has been called to the fact that the great important factor in the permanency of bone developed by orthodontic methods is functional activity. These leg bones which have been operated on, afterward assume their natural form because of normal function. It was not necessary to maintain a long retaining apparatus in order to keep the leg in shape. The bone had no tendency to relapse. It took on the same functions as the other bones and was made a permanent proposition as far as retaining the length of bone was concerned.

You might make another application as regards micromandibular developments. Different oral surgeons have advocated an operation for lengthening the mandible. A long article on this subject appears in the last number of the *American Medical Journal.* This operation will correct some cases of micromandibular developments that would require years of orthodontic treatment.

Dr. Abbott has called your attention to the fact that the pressure must be made directly to the bone. From an orthodontic standpoint we have an advantage over the orthopedic surgeon because nature has provided pegs in the shape of the teeth and they are attached to the bone and we can get the pressure on those "pegs" and transmit it directly to the bone.

As regards the application of these forces and the possibility of stretching bone in the facial region as a result of orthodontic treatments, I want to show you some slides you have all seen before, which bring up the discussion which has been going on for so many years as to whether it is possible to produce change in the palate or roof of the mouth.

Several years ago, as some of you know, we made this experiment with a number of dogs as regards opening the suture, and it amounted to nothing more than a stretching

proposition without any preliminary operating procedure. In dogs, as well as in human beings, remember that the teeth are attached in the sockets which are lined with the peridental membrane which blends with the periosteum and continues across the palate. In the dog you have the two curves in the palate and in the human only one. The periosteum runs across from one tooth to the tooth on the opposite side. There is an inelastic tissue extending across from one side to the other which offers a medium of applying pressure on the bone to change its shape.

In dogs or any other animal with an arched palate, you apply pressure, and because of the inelastic fibers of the periosteum and periodontal membrane it is possible to transmit force from one side to the opposite side and thereby straighten out or stretch the roof of the mouth.

As a result of this pressure you have the bone actually stretched and also changed due to interstitial changes which occur in the palate. That is simply a stretching process which has been carried on in these animals to a greater and more active degree than in the average orthodontic patients, but is still quite similar to the process Dr. Abbott has suggested in getting an increase in length.

Another application of the stretching method is used when you have occasion to treat fractures of the mandible after a general surgeon has mussed them up and the two ends of the mandible have slipped past each other. We have treated several of those in the hospital clinic. The orthodontic appliance is used to stretch the new-formed bone of the mandible and establish the original widths of the mandible which was narrowed up as a result of improper surgical procedure.

All of these things show that bone is a plastic material. It can be subjected to certain definite surgical procedures. We must not forget the statement that bone develops as a result of mechanical stimulation and with the proper application of mechanical means, you can get results which are very startling and wonderful.

Dr. Clinton C. Howard, Atlanta, Ga.—Dr. Abbott's most interesting presentation upon orthopedic surgery prompts at least one question, which, if answered will contribute to our present knowledge of growth characteristics.

He showed only cases which were between the ages of twelve and sixteen, or in other words, at the age of adolescence. It is during this age that the very greatest acceleration of bone growth takes place. That has been definitely demonstrated. Will Dr. Abbott tell us, assuming of course that he has made such observations, whether the proliferation of new bone tissue is as marked in cases which show a dormant stage in general skeletal growth? In other words, we know that children do not grow continuously, therefore would you obtain such rapid results except in children whose accelerated growth was most pronounced?

Dr. Abbott.—I was particularly interested in seeing the work which has been done by Dr. Dewey. I really had no idea that procedure of this type would bring up so much fruitful discussion. I do not know very much about orthodontia except what I see from some of the good men working at the Shriners' Hospital. I must say I have learned a good deal today from hearing the discussion and seeing the fine lantern slides which Dr. Dewey showed.

Regarding the question of bone proliferation brought up by Dr. Howard, that is very important. All our patients have been between the ages of ten and sixteen. We have never had the opportunity to do the operation on an adult patient.

I think the power of the bony structures, periosteum and endosteum to proliferate, is greater in a child than in an adult. The osteoblasts of the cambium layer are more active in a child than in an adult.

If you take a case of osteomyelitis and resect the bone, you have a reasonably good chance for repair provided you resect the bone at the right period. When there is a good deal of proliferation, you have a good chance of getting a satisfactory restoration of the shaft. In an adult we know that many of the cases fail to show complete regeneration and may require bone grafting operations.

As to the relationship to the rate of growth in the various bones at different ages of the child, I am sorry to say, I am not able to answer. That requires, of course, a perfectly astounding amount of work and observation which perhaps would require years to secure. The question has been brought up a number of times since we began the work and perhaps some day we will be able to get some help from the various men who are interested in the problem.

I cannot tell you about the rate of growth in the large bones, but we all know that the major portion of the growth in the lower extremity is from the lower femoral epiphysis. It has been very interesting to me because that was one of the difficulties I saw in the cases—to determine what would happen after the operation was done in regard to future growth. I thought the great trauma of the operation, peeling the periosteum from the circumference of the bone for four or five inches, would do a great deal of damage; instead of that the rate of growth has been speeded up, whether due to better function of the bone or not, I cannot say.

We have seen cases of osteomyelitis of the femur and tibia where stimulation has occurred from the infection with the result that the bone has been an inch or two longer than on the opposite side.

As to the elongation of the muscles, we thought of that at first, too, as to whether they would elongate and still function. Up to date in cases where the muscles have not been previously paralyzed, this operation has not produced any form of paralysis. It is not the muscle tissue that is hard to stretch, but the fibrous tissue periosteum, and the fascia. If one can section the fascia and the periosteum in their entire circumferences then the resistance of the muscles is not great and evidently as far as clinical operation is concerned, we have observed no bad effect.

I think that really answers another question which was asked regarding whether there was any greater difficulty attending lengthening in the cases where tuberculosis was present and where we had infantile paralysis to deal with. The inference was, how much effect strong muscles would have in preventing lengthening of the bone. As far as we have been able to observe, it makes no difference whatsoever.

As to the question of relapse—of course, we have not been able to observe the patients over a very long period of time. The longest period of time has now been almost three and one-half years. In that group of cases there has been no further shortening of the limb after the caliper walking splint and the retention apparatus were removed.

I think it is well to keep the apparatus on until the x-ray plates show the gaps well filled with callus. The pins seem to do no great harm except, of course, there is always a danger of infection. We dress the pins immediately after the operation and make no attempt to redress them during the lengthening process. In any place where we are using steel pins passing through bones, the best thing to do is put them in under the most rigid aseptic technic, preparing the patients as for a major operation, and then leave them alone. Frequent dressings often bring about infection.

A NEW MODELING COMPOSITION FOR ACCURATE ORTHODONTIC IMPRESSIONS

By Eric H. Golden, D.D.S., St. Louis, Missouri

AN IMPRESSION material having all the accuracy of plaster and still having all the convenience of a plastic compound has long been sought. Various materials and methods having good features have been given the operator but none, to my mind, have accomplished the desired result for orthodontic impressions for record and work models that can be obtained with the new modeling composition known as Dentocoll, a hydrocolloidal modeling composition.

The modeling composition comes in sticks the size of syringe supplied with outfit. A stick is inserted in syringe (Fig. 1) and placed in pan of boiling water (Fig. 4). After boiling for a period of about four minutes syringe is removed from pan and placed vertically on table, and mixing rod *A* (Fig. 1) is worked back and forth to mix thoroughly the composition which is now in a molten state.

After further boiling for a minute it is removed and mixing rod is worked back and forth vigorously about a dozen times. The material is now ready for cooling.

To cool, place syringe in cold water for a few seconds and again vigorously mix. Repeat this operation two or three times and finish the cooling in the hand, mixing thoroughly without further dipping of the syringe in cold water. The finish of the cooling must be done slowly, a sudden cooling at the last stage will cause the Dentocoll to set partially and form a film around the inner surface of the barrel.

The cooling is terminated when the syringe can just be held against the cheek. The material which should present a glossy surface and be able to hold its own weight is now ready for ejection into the impression tray.

Special perforated impression trays are on the market but I have found that by using plate punch (Fig. 7) you may adapt any tray you have for this material by punching holes in it as illustrated in Fig. 6.

To fill the tray pull back the mixing handle *A* (Fig. 1) and ejecting handle *B* to the fullest extent. Unscrew bottom cap *C*, and pushing forward handle *B* eject a small quantity of material into tray (Fig. 6) first.

Distribute the Dentocoll over the tray, pressing well through the perforations to insure retention.

Now eject the bulk quantity until tray is filled and conform to tray, smoothing the surface with a little vaseline on the ball of the finger. Do not use vaseline when working the first layer.

For lower impressions where a smaller bulk of material is required screw on spare cap which reduces the diameter of the material ejected. (Fig. 3.)

To reduce time in the mouth, immediately before inserting tray in mouth instruct patient to rinse mouth with cold water meanwhile cooling the back of the tray by holding in a dish of cold water, not allowing water to flow over the Dentocoll surface.

To take impression, insert tray in mouth and press in position. Hold impression tray in mouth for a minute, after which, the hands may be removed as the material will hold firmly to the teeth. Then cool with cold water, using either cold water syringe or, as I have found more suitable, a

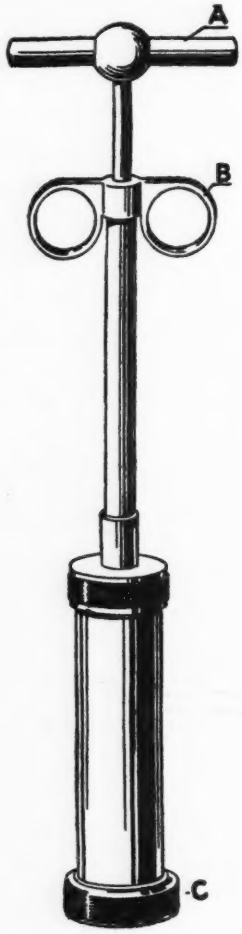

Fig. 1

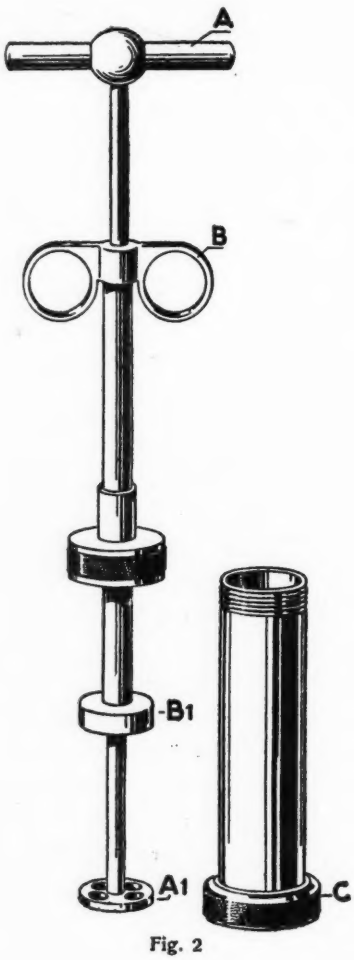

Fig. 2

DeVilbiss spray using compressed air for two minutes, making three minutes in all. Saliva ejector may be used to carry away overflow.

Remove impression with the fingers carefully and not with the handle of the tray. Same may be used only after impression has been loosened. Do not use force, with a little pressure applied buccally to the impression an area will be found where atmospheric pressure may be easily broken. Fig. 8 illustrates impression.

When pouring the impression it should be washed under the cold water tap and poured immediately. If this is not possible it should be placed in

a glass air-tight container (Hygrophor) as shown in Fig. 5. The impression must on no account be left exposed, as loss of water content through evaporation is followed by contraction.

Impressions may be removed for plaster cast without the use of hot water, and if removed carefully other models may be obtained from the same impression. Removal of impression from the cast is facilitated by dipping in cold water before any attempt is made to remove impression.

Before each subsequent pouring wash impression under cold water tap and paint it with soap water.

Fig. 8 illustrates impression taken with Dentocoll using impression tray prepared as previously described.

Fig 3.

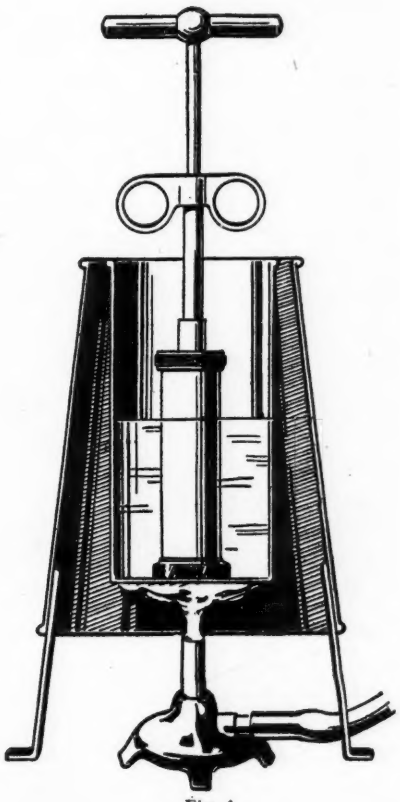

Fig. 4

Fig. 9 illustrates original plaster cast poured from impression, it also shows duplicate from original impression.

I have found that a very good mixture for general use for orthodontic casts, both for record casts and work casts, is one part stone and three parts plaster. The advantages are that it has the working properties of plaster, sets in about the same time as plaster but is much harder and for work casts it is ideal. In mixing I use a whip mix spatulator. I am indebted for this combination to Dr. R. C. Willett of Peoria, Illinois, who ran a number of experiments before arriving at this proportion.

Fig. 10 illustrates metal form that I have found of great help in giving a neat finish of definite thickness to the base of casts. There are four forms

in the set 5/8" deep and each form 1/4" larger starting with 2 1/2" by 2 3/8" for the smallest form. The form is split at the front so as to spring apart when removing from cast. Oil or vaseline is applied to the inner surface before

Fig. 5

Fig. 6

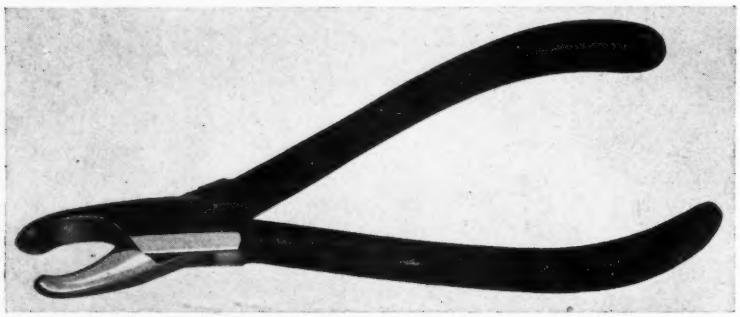

Fig. 7.—Illustrating plate punch used to adapt trays for Dentocoll.

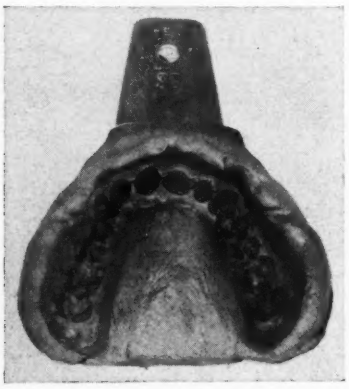

Fig. 8.—Illustrating impression taken with Dentocoll.

pouring cast. The advantages are that we always get a uniform and finished base for our casts without spending a great amount of time carving. Impression is poured first then metal form is placed on glass slab and filled and

impression is placed on form and excess plaster wiped away. When plaster has set and cast separated metal form is sprung slightly and removed giving a smooth, uniform base.

As to the accuracy of this modeling composition I am giving the following experiments which were made to test the linear dimensional changes of Dentocoll impression material as would occur in actual use.

A sample of Dentocoll material was poured in a wax ring after mixing as per the recommendations of the manufacturers as follows:

The Dentocoll capsule of material was inserted in the regular warming gun and the end cap screwed on. The gun was placed in a pan of water

Fig. 9.—Illustrating original and duplicate casts.

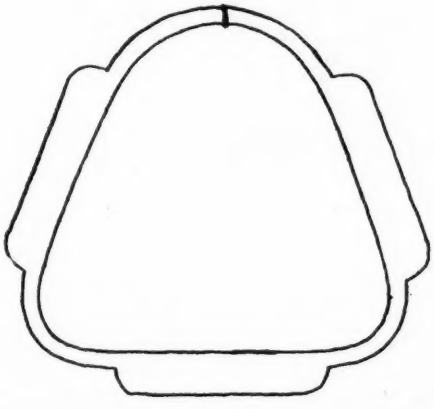

Fig. 10.—Illustrating metal form used to form base for casts.

almost boiling hot. When the gun had acquired a temperature slightly uncomfortable to the hand, it was taken out of the water and the plunger was pushed back and forth through the material until the mixing barrel could be tolerated with comfort against the hand.

The cap was then removed and the Dentocoll material was pushed out of the gun into a wax ring exactly one inch high and with a diameter of about one inch. It was quickly tamped down with a finger slightly coated with grease (to prevent sticking) until level with the upper edge of the wax ring. The wax ring with its supporting base was set inside a tumbler.

An aluminum disk slightly smaller in diameter than the wax ring was placed on top of the material in the wax ring, and the plunger of an Ames

Dial Indicator reading to 1/10,000 of an inch was brought down on top of the aluminum disk. Water was immediately added to cover completely the sample of material.

Measurements were taken of the linear dimensional changes of this one inch sample of Dentocoll material by reading the dial indicator and the minutes elapsed after pouring the sample. The material had begun to set or stiffen even while being tamped into the wax ring and when the cold water was added, it apparently set immediately.

CONCLUSION

If the impression material is poured up in stone or plaster as soon as the impression is taken out of the mouth, as the directions call for, the dimensional change or the volume change after removing the impression from the mouth would certainly lead to no appreciable error as the linear contraction even after ten minutes was less than 1/10 of 1%.

As a comparison, it might be mentioned that the ordinary dental impression plasters expand in setting from about 0.1 to 0.35 of 1%, also from 0.3 to 0.5 of 1%; while if poured with artificial stone, the model would expand from 0.05 to 0.1 of 1%.

TABLE I

MINUTES AFTER POURING IN RING		LINEAR CONTRACTION OF 1 INCH OF MATERIAL IN INCHES	PER CENT
0		0.0000	0.0000
3	Sample covered with cold water	0.0005	0.05 of 1%
6		0.0008	0.08 of 1%
9	Out of water but enclosed in glass dome	0.0008½	0.085 of 1%
20		0.0012	0.12 of 1%
30		0.0017	0.17 of 1%
50	Dome removed, permitting drying out in air	0.0020	0.22 of 1%
100		0.0027	0.27 of 1%
125		0.0033	0.33 of 1%
360		0.0049	0.49 of 1%

Summary.—1. This modeling composition is pleasing to the patient as it is flavored, and when placed in the mouth at the proper stage it is far cooler than any compound.

2. There are no disagreeable reactions such as are found when using plaster.

3. The impressions are taken faster and with more comfort and ease to the operator as the material cools rapidly and when placing in the mouth acts like plaster in flowing into every crevice.

4. The impressions are accurate as proved by previously mentioned tests.

5. As the material is elastic and appears to have fiber incorporated, it holds its form well and undercuts, and various angles of teeth found in malocclusion cases are reproduced very accurately.

6. Duplicate casts may be made from the original impression without another visit to the office by the patient or having patient to go through the procedure of another impression.

430 UNIVERSITY CLUB BLDG.

A PROGRESSIVE REPORT OF A CLASS II DIVISION 2 INFRAOCCLUSION CASE

Particular Attention Being Given to the Temporomandibular Articulation and the Angle of the Ramus and Mandible*

By Burt Abell, D.D.S., Toledo, Ohio

I AM reporting a Class II, Division 2, infraocclusion case for the following reasons:

One year from now, I hope to be able to compare the condition existing then, in (a) the temporomandibular articulation, and (b) the angle of the ramus and mandible, with what we have here today.

Fig. 1.—Profile at beginning of case.

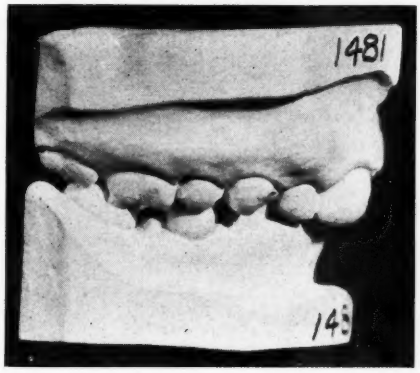

Fig. 2.—Right side at beginning of case.

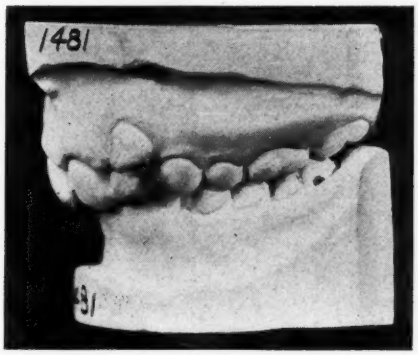

Fig. 3.—Left side. Just to show extent of overbite and distal relations.

I have never seen a report of what happens in either area. I am not so sure we are going to find out even now. However, if this report will stir up some of you men to get after the same problem, with better equipment

*Case report presented before the American Society of Orthodontists, Buffalo, N. Y., April 30-May 3, 1928.

and more favorable cases, we may be able to ultimately determine just what takes place when we "jump the bite."

In Fig. 7 we begin to enter into the consideration of our problem field. In taking the x-rays an attempt was made to superimpose the external auditory meati, but the negatives show the right and left rami not quite in line. Their margins were so indistinct that I inked them in. This picture is taken with the teeth at rest and in the distal position.

Fig. 8. The teeth in normal mesiodistal position, held so by the bite plane.

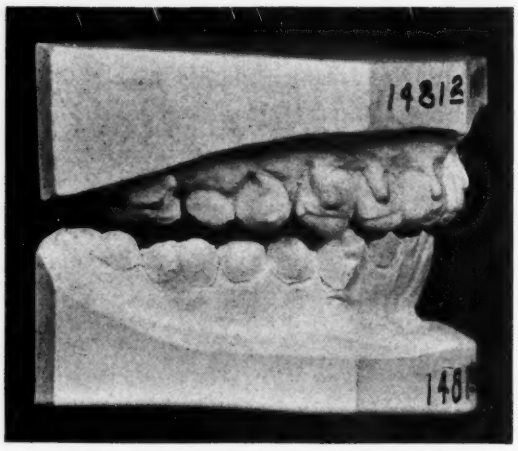

Fig. 4.—Teeth aligned and voluntarily placed in position of mechanical advantage.

Fig. 5.—Profile when teeth are in normal mesiodistal relations.

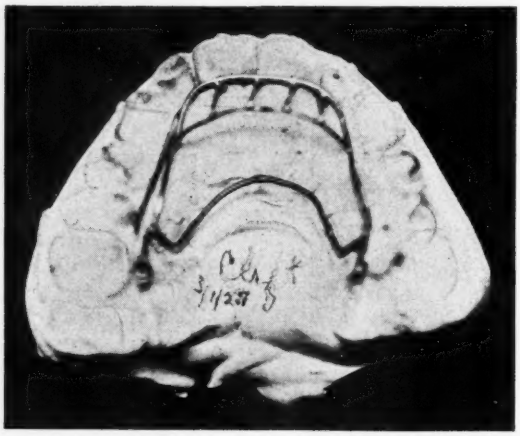

Fig. 6.—The bite plane that directs lower teeth into position.

In Fig. 9 within the loop we see the head of the right condyle and glenoid fossa, the teeth being in the distal position, the bite plane having been removed.

Harry Dachtler, Toledo, who kindly made these x-rays for me, seemed much interested that the head of the condyle should be so small.

In Fig. 10 in the loop notice the head of the condyle seems literally to be dragged out of the fossa as the mandible is placed mesially into normal relations with the maxilla and held by the bite plane.

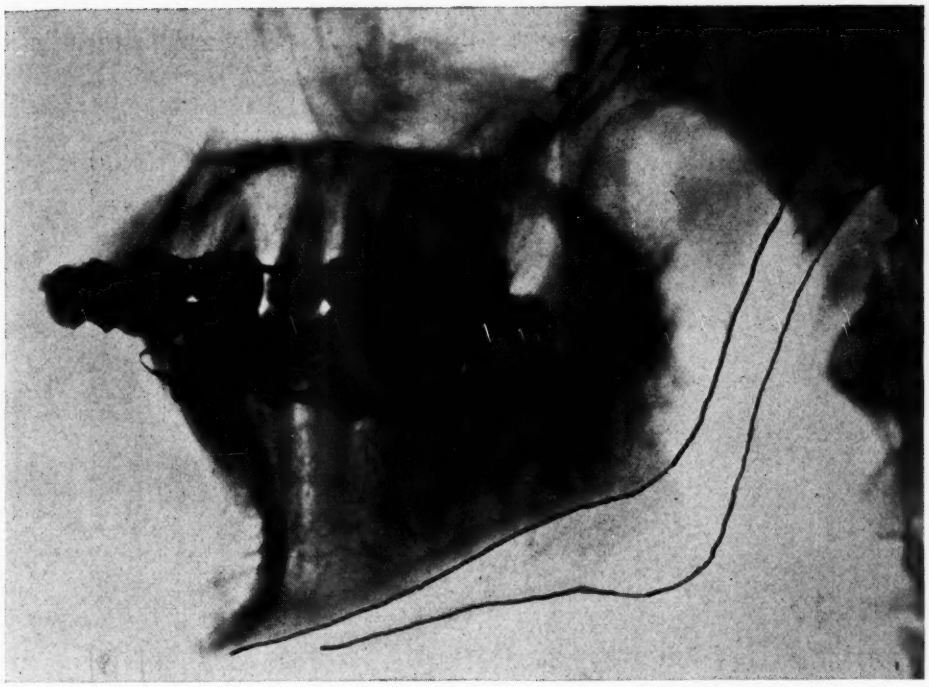

Fig. 7.—Mandible at rest in the distal position. Bite plane removed.

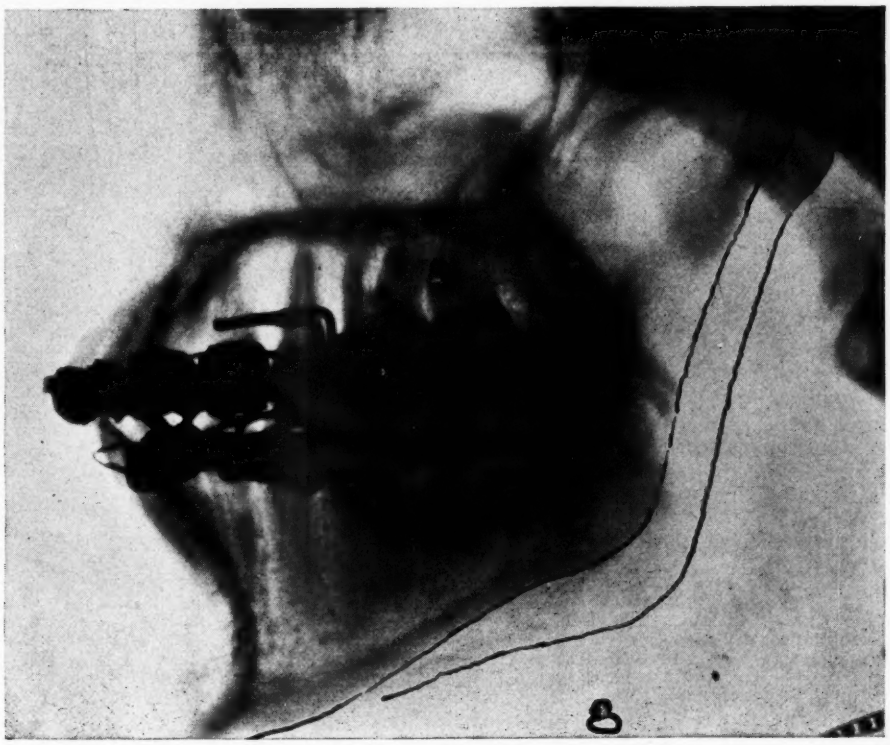

Fig. 8.—Teeth held in normal mesiodistal relations by the bite plane.

Query 1. Is the size of the condyle head affected by the repeated mesial and distal excursions of the mandible?

Query 2. When the teeth eventually stay in normal mesiodistal relations (judging by previous cases we can legitimately expect they will), will the

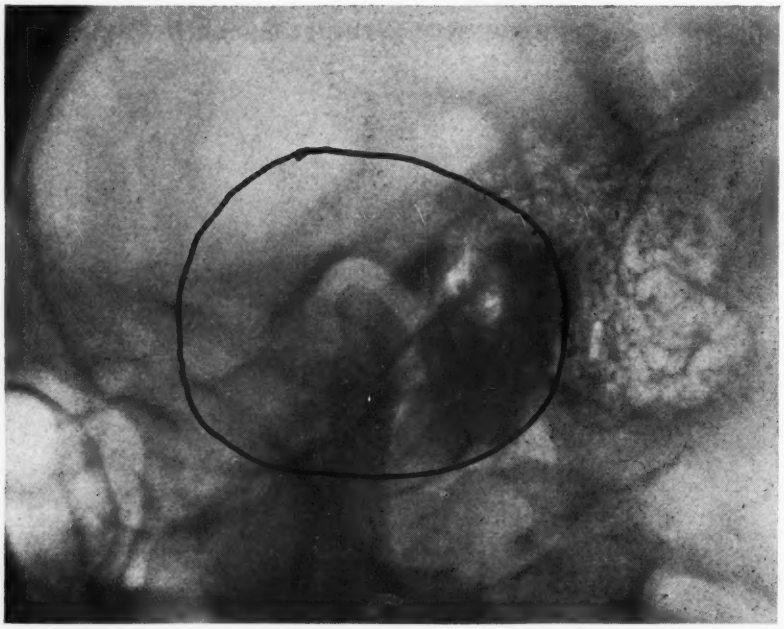

Fig. 9.—Right condyle and fossa with mandible at rest in distal position.

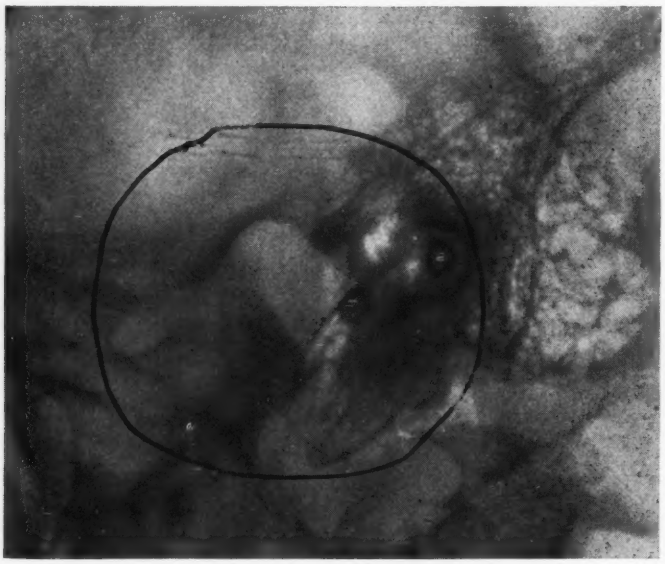

Fig. 10.—In the loop notice the head of the condyle is literally dragged out of the fossa as the mandible is placed in the mesial position.

angle of the ramus and mandible increase to compensate for the new position of the mandible? Or

Query 3. Will the body of the mandible revert to the old position and this angle remain the same but the teeth tilt to keep cusps in occlusion? Or

Query 4. Can we expect some compensating change in the temporomandibular articulation?

"One swallow does not make a spring," and not much can be learned from one case, so I hope some of the rest of you will go home, check up on present conditions of some of your cases and let's all have a report on progress one year from now.

443 W. Bancroft.

ORTHODONTIC TREATMENT AND RESULT OF A CASE OF MALOCCLUSION OF THE TEETH BROUGHT BY CONDITIONS ASSOCIATED WITH CONGENITAL CLEFT PALATE AND HARELIP (CASE REPORT)*

By Milo Hellman, D.D.S., F.A.C.D., New York City

THIS case is presented because it is unusual and rare in orthodontic practice. The patient, a boy, was twelve years old. He had been operated upon six times for cleft palate and harelip; the first operation was performed

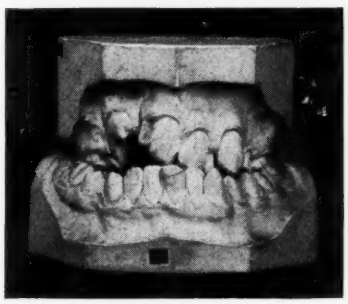

Fig. 1-*A*.

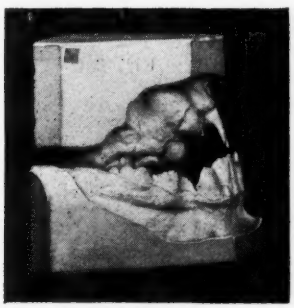

Fig. 1-*B*.

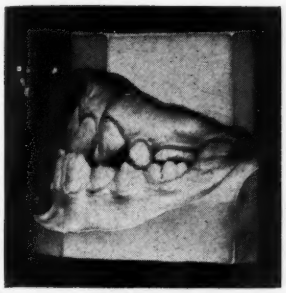

Fig. 1-*C*.

Fig. 1-*D*.

a few days after birth, the last when the patient was two and one-half years old.

The time when each set of impressions was taken is indicated on the top view of the lower cast in each set.

*Case report presented before First International Orthodontic Congress.

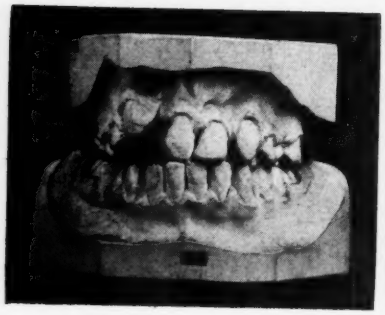

Fig. 2-*A*.

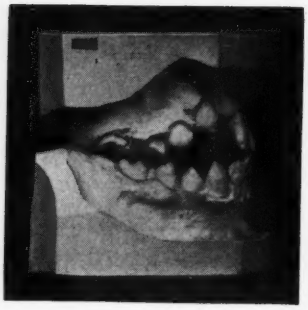

Fig. 2-*B*.

Fig. 2-*C*.

Fig. 2-*D*.

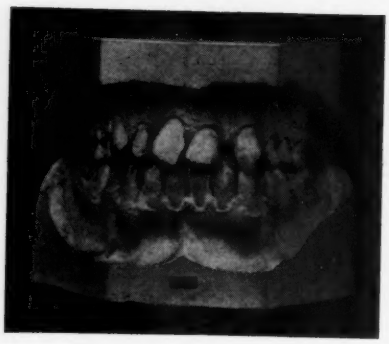

Fig. 3-*A*.

Fig. 3-*B*.

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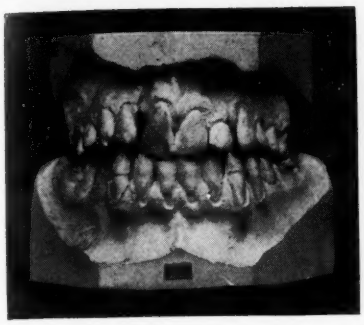


Fig. 4-*A*.

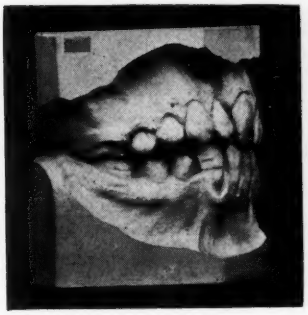


Fig. 4-*B*.

Fig. 4-*C*.

Fig. 4-*D*.

Fig. 5-*A*.

Fig. 5-*B*.

Fig. 5-*C*.

Fig. 5-*D*.

The illustrations show the possibilities and handicaps of this kind of case. It is gratifying to the patient, but unsatisfactory to the orthodontist *if ideal results are aimed at.*

The following points are of interest in the illustrations:

1. Occlusion.
2. Vertical position of individual teeth.
3. Horizontal plane of dental arches.
4. Rotated teeth, especially maxillary premolars.
5. Comparison in dimensions of maxillary and mandibular dental arches.
6. Missing teeth.

The *great handicap* is the readiness with which the alveolar and gum tissues yield to the stress of orthodontic appliances. Despite the extreme care exerted, there is an excessive resorption of the facial plate of the alveolar bone and the gum tissue covering it. From a practical point of view, it is satisfactory, but extremely time-consuming.

AN EFFICIENT SOLDERING AND CEMENTING CABINET*

By B. L. Hyams, D.D.S., Montreal, Canada

THIS cabinet was devised to reduce to a minimum the expenditure of time and effort in soldering and cementing operations at the chair. As these operations monopolize a great part of the working day, it constitutes a valuable addition to the equipment of the operating room.

The cabinet measures twenty inches long, twelve inches wide, and twelve inches high. It has a vitrolite top, seven drawers, and an open section four inches high. It is fastened to the wall beside the chair at a convenient height to suit the operator.

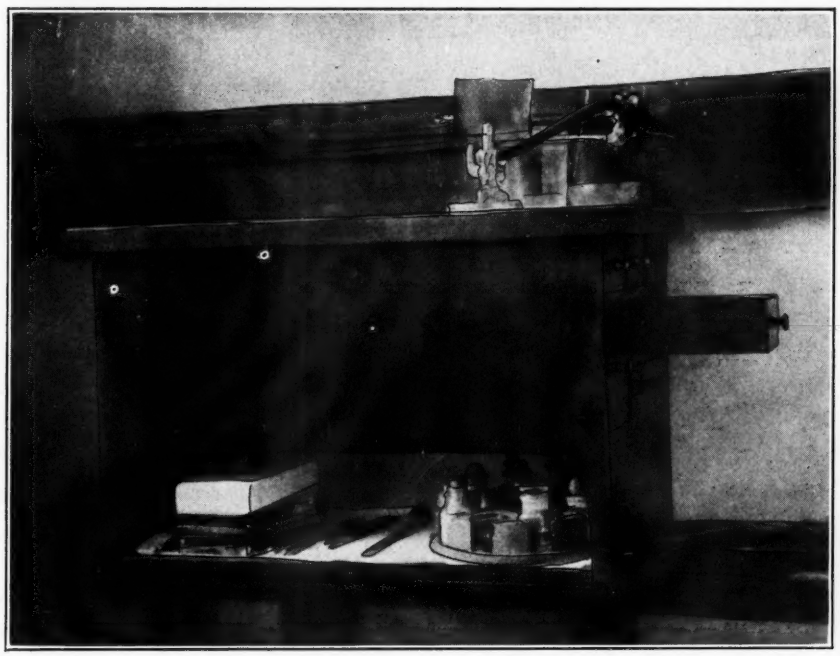


Fig. 1.—Cabinet ready for soldering.

SOLDERING ARRANGEMENT

A Grunberg blowpipe is fed by gas and air taps fitted with controls three inches in length. Guides, marking the open position of the taps, secure fair mechanical control of the flame. A glass of water for quenching, and a dish for the handling of bands and parts by the assistant, may be seen in the accompanying illustrations. The drawers accommodate band materials, several gauges of wire, attachments, soldering instruments, solders, scrap, several appliances under construction in separate envelopes, etc.

*Clinic presented before the Twenty-sixth Annual Meeting of The American Society of Orthodontists, Chicago, May 2-5, 1927.

CEMENTING ARRANGEMENT

The open section houses several mixing slabs, spatulas, scalers, mouth mirrors, cotton pliers, and a cement rack. This rack holds a rapid and a medium setting cement, a copper cement, grain spirits, and a quantity of

Fig. 2.—Materials and instruments arranged for cementing a band.

flavored lubricant to improve the taste of cement and protect the fingers from acid. The open drawer in the second illustration holds a supply of cotton rolls.

The drawers opening at the sides and the open section facing to the front eliminate a great number of unnecessary movements from these operations.

DEPARTMENT OF
ORAL SURGERY, ORAL PATHOLOGY AND SURGICAL ORTHODONTIA

Under Editorial Supervision of

Sterling V. Mead, D.D.S., Washington, D. C., Director

M. N. Federspiel, D.D.S., M.D., F.A.C.S., Milwaukee.—Vilray P. Blair, M.D., F.A.C.S., St. Louis, Mo.—Theodor Blum, D.D.S., M.D., F.A.C.D., New York.—Leroy M. S. Miner, M.D., D.M.D., Boston.—Wm. L. Shearer, M.D., D.D.S., Omaha.—Fredrick F. Molt, D.D.S., Chicago.—Robert H. Ivy, M.D., D.D.S., Philadelphia.—Edward L. Miloslavich, M.D., Milwaukee.—French K. Hansel, M.D., M.S., St. Louis, Mo.

PREPARATION OF MOUTH FOR INSERTION OF DENTURES

By Geo. F. Seeman, D.D.S., Nashville, Tenn.

SURGICAL PREPARATION OF MOUTH FOR DENTURES

UNLESS the mouth is prepared properly it means that the patient must go toothless for months, which in turn causes the patient in a great many instances to suffer from indigestion and the other ills which follow, as poor nourishment and the loss of weight. Also, the patient's facial lines and contour are lost, together with loss of tone of the muscles, all of which make the wearing of teeth more difficult. The sooner the dentures can be inserted the better for the patient. This is the opinion I have from our prosthodontists. I am thoroughly convinced from my experience that the proper trimming of the alveolus is an important procedure for the patient and dentist alike. A surgeon would not remove an organ and leave ragged outlining tissues. We must bear in mind that the alveolar process is more or less transitory, being formed with the eruption of the deciduous teeth, and being absorbed with the removal of the permanent teeth. If alveolectomy is not practiced, the patient suffers for months with pieces of process working superficially to the surface, and in many cases causes discharging sinuses into the oral cavity, giving the patient great discomfort as well as causing various types of reflex disturbances. Of course, if the patient has suffered with chronic suppurative pericementitis the process is all destroyed and alveolectomy is not necessary except for thorough curettement of necrotic bone caused by the invading infection. Every case demands special study before the removal of the teeth. The various undercuts must be determined before operating, and the finished mouth visualized before starting. A good plan, if possible, is to secure some study models. Too much emphasis cannot be laid on the cultivation of sound surgical judgment, and on the importance of careful examination and study of the various possibilities and procedure which may be beneficial in each

individual case, as it is seldom we find two cases exactly alike in mouth surgery. Please let me state I do not advocate radical alveolectomy but believe in conservative treatment always. I do not believe, however, we, as dentists, render our best when we dismiss a patient with loose fractured process and sharp irritating spines of osseous tissue, and this happens in a large percentage of cases. I also wish to state that our patients *highly* appreciate this class of treatment. They compare mouths, and comment. If their mouths are rough and ragged their comments are not so good (if you happen to be their dentist). The American public today demands service. So for future prac-

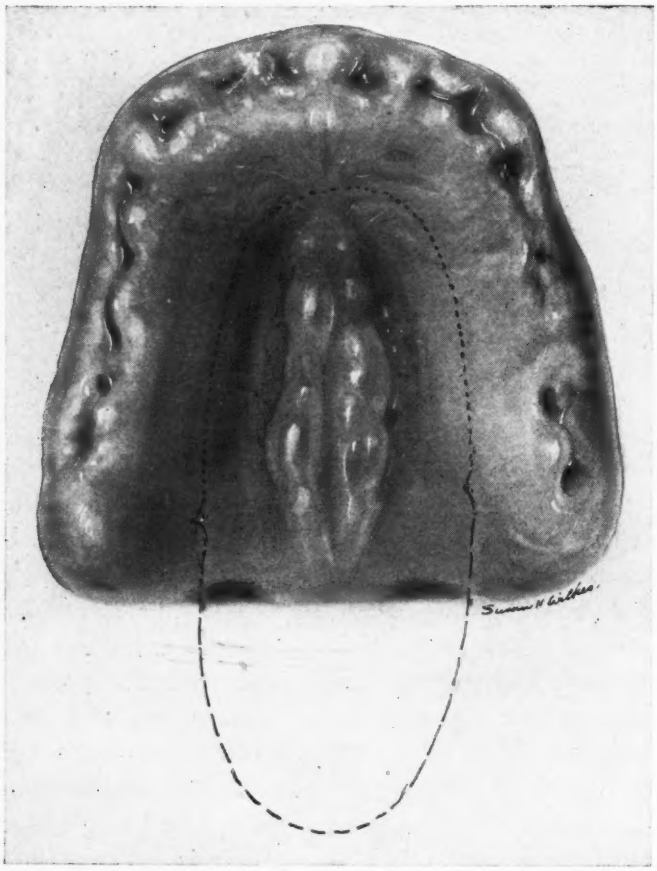


Fig. 1.—Showing congenital abnormality in the palate with outline of incision for removal.

tice and business I plead for proper trimming of process. Every time you operate upon a patient, your reputation is at stake. It matters not what the nature of the operation is.

The object of the operation is to correct abnormalities and deformities of the alveolar ridges which interfere with the proper adaptation of artificial dentures, or other dental restorations; to remove sharp or projecting edges of alveolar process, following the removal of the teeth which, through pressure and irritation of the overlying mucous membrane, are frequent sources of facial neuralgias, or localized inflammatory conditions and ulcerations; to expose infected areas such as granulomas and cysts which are lodged in the

maxilla or mandible which may be associated with infected teeth or which may be pathologic areas previously overlooked and exist as diffused latent infections; to remove excessive parts of the alveolar ridge which prolong cicatrization and unduly prevent the placing of artificial dentures.

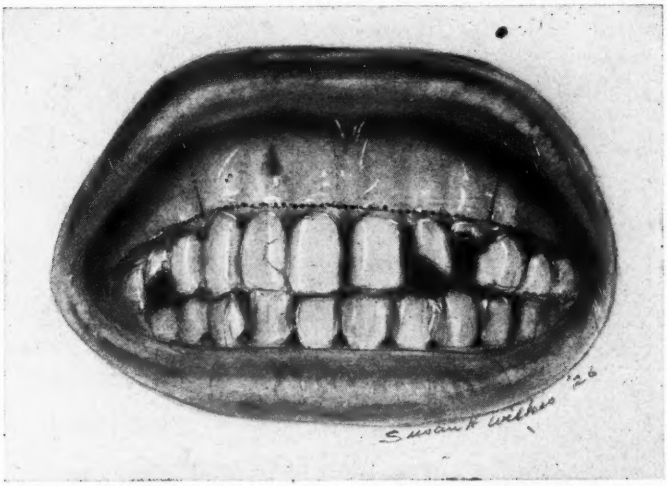


Fig. 2.—Initial incisions for the mucoperiosteal flaps.

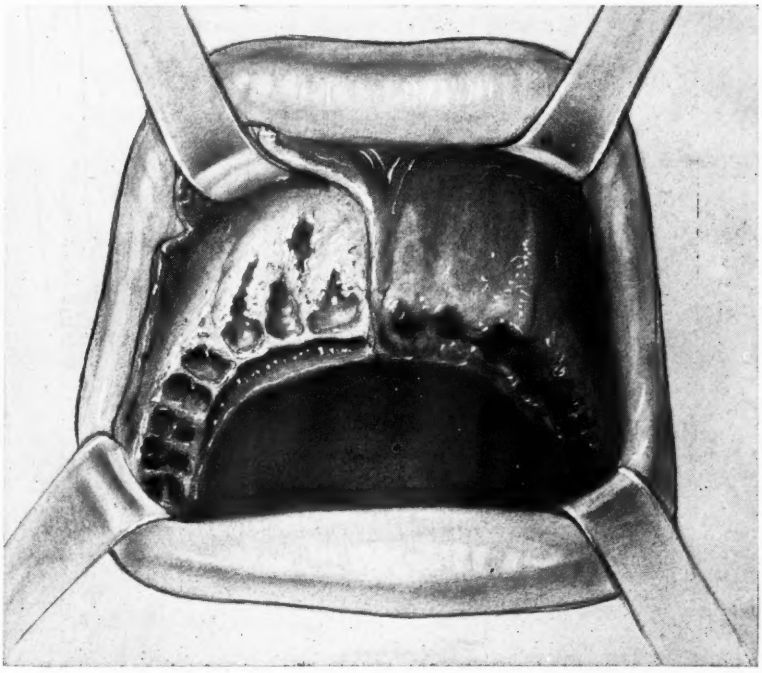


Fig. 3.—Reflected mucoperiosteum showing condition of bone.

The abnormalities which indicate the operation may be congenital or acquired.

The congenital abnormalities occur more often in the maxillary than in the mandibular jaw. An illustration of this is seen in Fig. 1. These are present as bulky masses of bone, more frequently in the molar, or in the condyloid region, and may project lingually, or bucally, or both. While the teeth

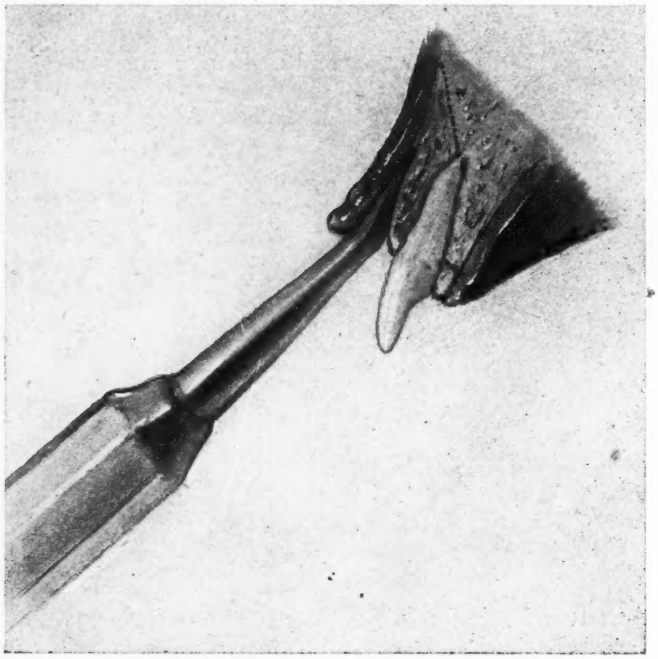


Fig. 4.—Lateral view of reflecting mucoperiosteum.

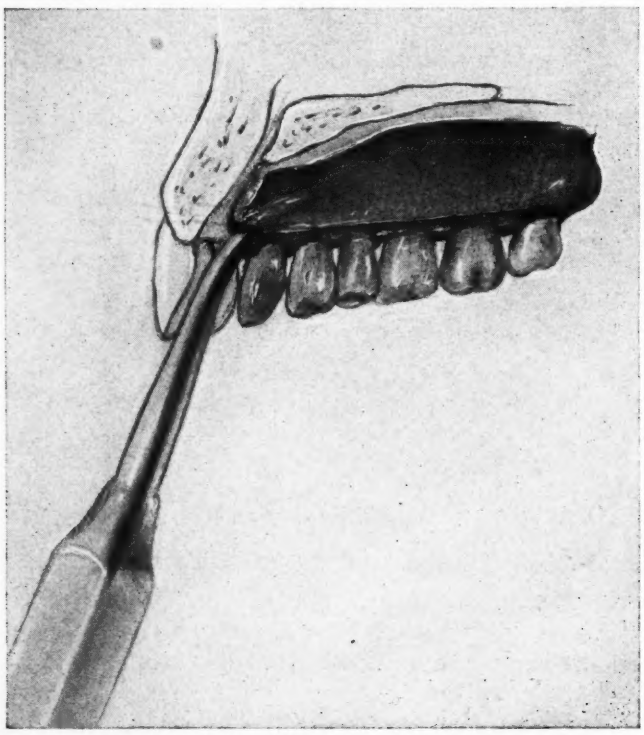


Fig. 5.—Lingual view of reflecting mucoperiosteum.

are in place these areas have no pathologic or surgical significance. With the removal of the teeth, however, these parts rest upon or are so close to the tissues of the opposing jaw that there is not room for a denture. The buccal and labial masses of bone may cause such undercuts as to make it impossible to construct a denture without surgical interference. In the anterior part of the

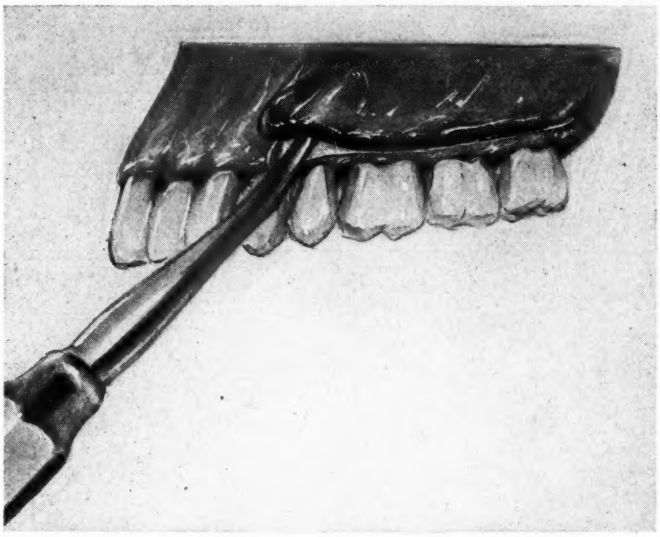


Fig. 6.—Buccal view of reflecting mucoperiosteum.

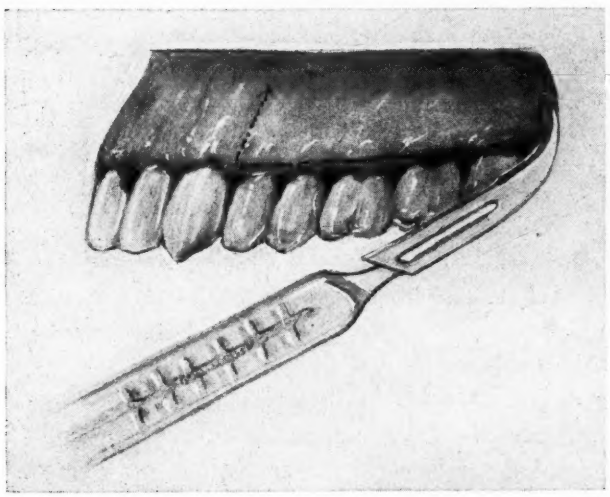


Fig. 7.—Use of curve blade for posterior incisions.

mouth where the outline of the maxillary jaw is considerably larger than that of the mandibular, it is often helpful to trim the excess down into better conformity with the mandibular. There are also cases where the alveolar ridge is too deep and considerably out of proportion with the lip line.

Mention may be made here of the congenital osseous excrescences which are not infrequently found to be situated at the median line of the palate. (Fig. 1.) This excrescence is found to be present in females as well as in males. It is

sometimes mistaken for a newgrowth or cyst. The overlying mucous membrane is always normal, unless it is subjected to irritation as in the wearing of a denture. The bone, however, presents no pathologic signs. This sometimes offers considerable impediment in the fitting of a denture. In this event the removal of the mass is permissible, fitting many patients so that they can wear artificial dentures. It presents no pathologic features and causes no inconvenience to the patient. Very often you find these congenital growths in the internal surface of the mandible in the region of lateral incisors, canines and premolars. These require lots of care in removing due to the thin covering of mucous membrane. They present as unilateral or bilateral enlargements and give one the impression of an osteoma. The radiogram taken

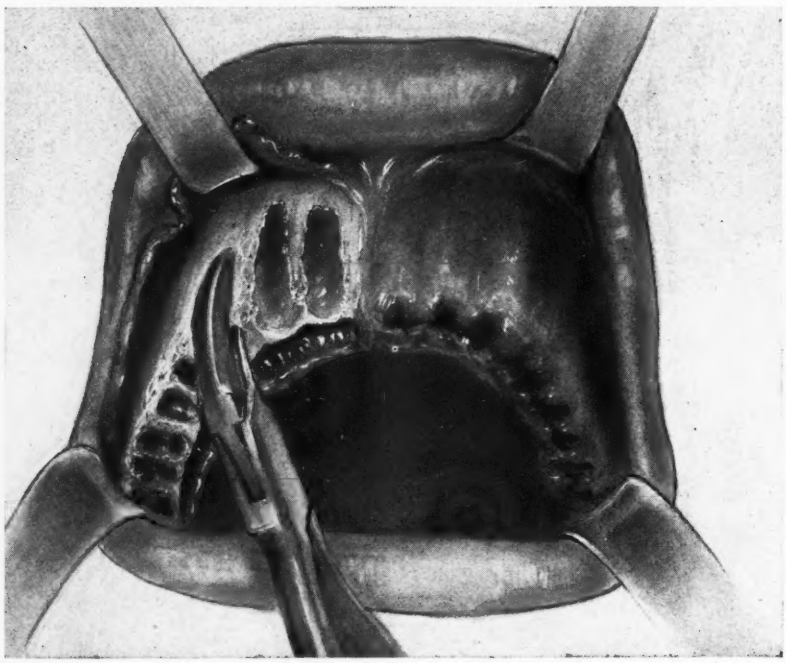


Fig. 8.—Removing the buccal or labial portions of bone between the septums.

through the bone is negative and if one is taken from beneath the chin parallel with the long axis of the teeth, the mass appears as a shelf of bone which is normal in its structure. These growths are observed on the lingual aspect of the mandibular third and second molars which can be removed and denture work made possible.

We have spoken of the congenital abnormalities; now we will consider the acquired conditions inviting operation. The acquired conditions may exist prior to the removal of the teeth or only after they have been removed. The removal of teeth at different periods often results in a marked irregularity in the outline of the alveolar ridges. The loss of antagonists after a long period may cause a tooth to elongate with proportionate growth of the alveolar process. This is one of the most frequently acquired causes of irregularity in the outline of the alveolar ridges. Undue laceration in the

removal of teeth or necrosis often causes irregularities which can be advantageously corrected by alveolectomy. The operation is often indicated, also, where a number of teeth are removed at one time. The ragged ridges can be excised and smoothed to induce more rapid and more even cicatrization.

With the discovery of some fallacies in the practice of some types of bridge work, there is a considerable tendency in favor of plate prosthesis. In this work many troublesome deformities and irregularities of the alveolar ridges demand correction. We cannot refrain from pointing out, however, that, not unlike other recently popularized methods of practice, this operation has been often abused, or injudiciously performed. Numerous men who specialize in plate prosthesis, claim that the alveolar ridges are often so mutilated and flattened that it is impossible to secure retention for their dentures.

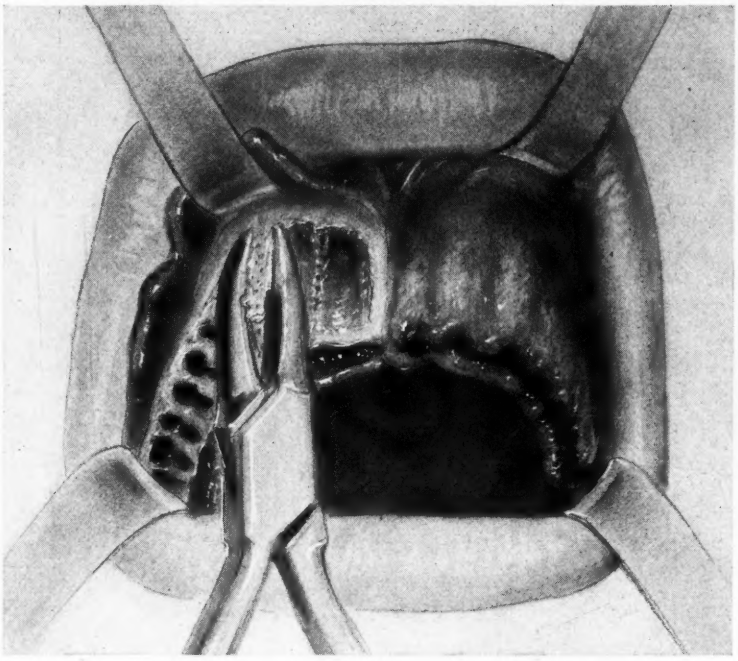


Fig. 9.—Beveling septums to relieve under cuts.

The operation should be performed only in those cases where there is a decided indication for it, and in such manner that, when cicatrization ensues, a useful and retentive alveolar ridge is the result.

TECHNIC OF OPERATION—PREPARATION OF PATIENT

The patient's face is cleansed thoroughly and sponged with alcohol. Operation room is prepared surgically, instruments properly sterilized and systematically arranged on the bracket table. This is a point we, as dentists, are lax in, that is, our technic of sterilization, and this includes instruments, your own hands and your assistants' hands, and every detail should be carried out to the letter if you hope to render the best possible service to your patient and accomplish the best results. Prior to operation the mouth is thoroughly irrigated, and the field of operation is sterilized with a prepara-

tion of equal parts of iodine and alcohol. Next is the incision, which depends on the existing conditions. (Fig. 2.) If the part is an old deformity, the incision is carried over the center of the ridge and mucous membrane reflected

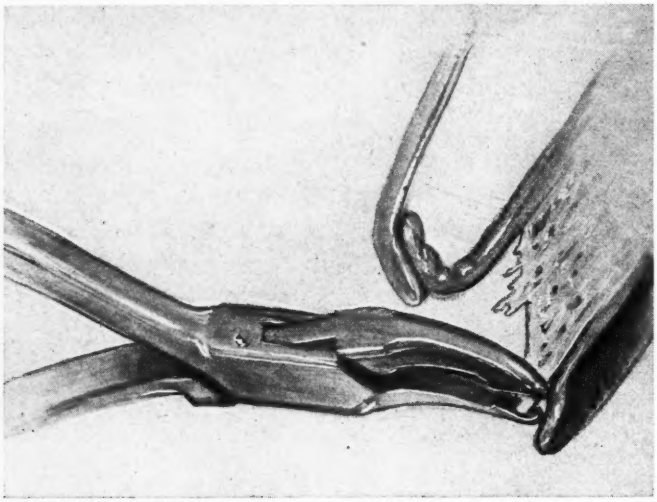


Fig. 10.—Cutting sharp spine left at right angles to the long axis of socket.

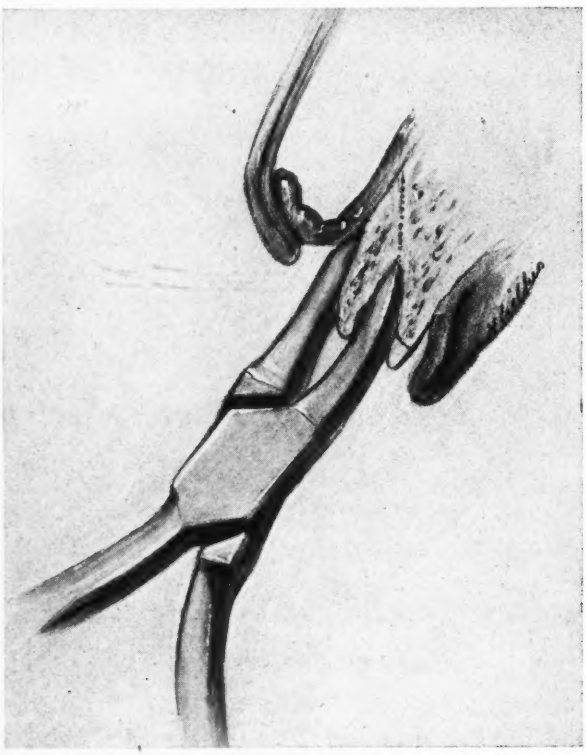


Fig. 11.—Lateral view of cutting.

respectively toward the palate and toward the buccal or labial surface. (See Figs. 3 and 4, 5 and 6.) If the incision is extensive vertically, incisions are made with a mesial slant to prevent tearing of the mucoperiosteum.

When the operation is performed at the time of the removal of the teeth, the incisions are made at the gingival border of the teeth so that the gum tissues which ordinarily fill the interdental spaces and bind the buccal and lingual mucosa are divided and hence readily removed after extraction, leaving two raw edges to bring together, thus achieving rapid results. I have found the Bard-Parker knives very helpful in making the incisions, as you have a good sharp knife at your disposal at all times. (Fig. 7.) However, any sharp blade is all right, but it is very essential to have a good cutting edge. After your incisions are made, the next step is the retraction of the muco-periosteum, which is done with a periosteal elevator or a blunt instrument

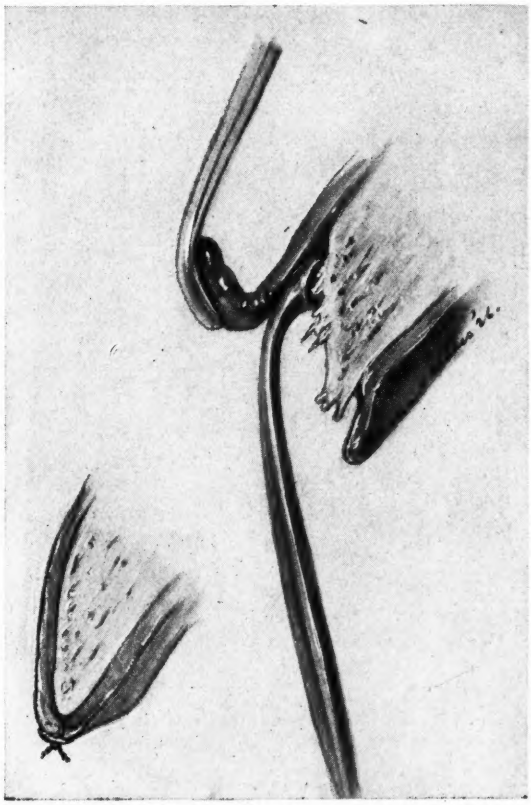


Fig. 12.—Final finishing of ridge and final result.

with a convex surface. This should be done very carefully and tenderly if you wish the best results. After the flaps are reflected, the superfluous portion of the alveolar bone is trimmed with a rongeur or bone-cutting forceps. I prefer the smaller ones with short handles, as Rongeur No. 4, made by Cleveland Dental Company.

Now in trimming this bone, I try to have a definite procedure, starting at a definite place and finishing at a designated place, not biting here and there until the patients say they cannot feel sharp edges. I start by taking the buccal or labial portions of bone between the septums. (Fig. 8.) After this is completed I turn my rongeur over in such a position so as to bevel the remaining septums toward the buccal or labial surface. (Fig. 9.) This, I

think, will be better explained by illustrations. Then the triangular portions of bone left on the palate side are cut off at right angles to the long axis of the socket (Figs. 10, 11); then the cutting is finished. If you start in without a definite procedure, and trim promiscuously, you will cut one sharp spine and then you have two remaining; remove these and you have four, etc. You never know when you have finished. After the cutting is finished, I use a large cutting curette and round off all my surfaces, leaving no sharp edges (Fig. 12), and at the same time remove any pathologic tissue in the bottom of the socket, all of which can be plainly visualized. Superfluous parts of mucous membrane are trimmed until the edges approximately fit snugly over the newly formed alveolar ridge. These are sutured with horsehair or silk by the interrupted method (Fig. 13).

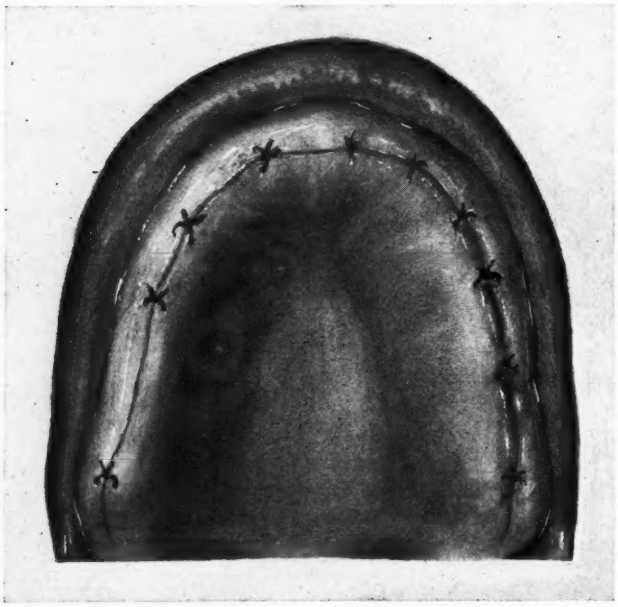


Fig. 13.—Finished mouth with sutures.

The palatal mucous membrane is quite thick and as a rule unyielding if in the approximation the buccal flap has to be brought over considerably toward the palate. This produces a slanting surface. The inclined plane which thus results makes the retention of a prosthetic appliance very difficult. This condition can be overcome by cutting the palatal mucous membrane on the surface next to the bone. Care must be taken that the edges of the mucous flaps are so approximated that the pared edges are brought into direct opposition without undue pressure or traction so that they meet at the center of the ridge without overlapping. In the absence of infection or sloughing these conditions heal by primary union and may be removed in four or five days. Postoperative treatment consists of thorough irrigation with mild antiseptic and deodorizing solution, as boric acid or normal saline and the maintenance of cleanliness of the oral cavity. The application of irritants or escharotics to the wounded edges is superfluous.

In conclusion let me repeat what I said in a report to the Tennessee State Dental Association last spring. The time has come when it is necessary for every dental society that keeps abreast with the times to advance through the channels of research work in producing better work, improving technic, etc. There is no such thing as a dental organization standing still in these days; when it is doing this, it is going backward.

DIAGNOSIS AND TREATMENT OF SWELLINGS AND GROWTHS OF THE MOUTH*

By Sterling V. Mead, D.D.S., Washington, D. C.

THE mouth is subject to practically all of the various diseases which attack other parts of the system, as well as a few distubrances peculiar to itself. Many of these diseases may terminate fatally, and prompt and correct treatment is imperative. There has been a tendency to look too lightly upon these conditions and to feel that the serious cases are rare.

Every dentist should be continuously watching for swellings and growths in the mouth and adjacent parts and if he feels unable to make a diagnosis, the case should immediately be referred to an oral surgeon so that an early diagnosis may be made.

DIAGNOSIS

Diagnosis of these conditions requires first a complete knowledge of normal embryologic development, histologic and anatomic structures, and normal physiologic and biologic functions, as well as a knowledge of bacteriology and other etiologic factors of injury or disease, pathologic reactions of tissue, and accompanying objective and subjective symptoms.

A thorough understanding of all of the diagnostic methods is essential, and the differential diagnosis is made by a correlation of the subjective symptoms, objective symptoms, objective manifestations, previous history, history of present disability, laboratory tests, etc.

The examination should be conducted in a routine manner, and the results of the examination recorded on some suitable printed chart (Figs. 1, 2 and 3), so that an accurate and positive diagnosis may be made which may be quickly consulted. The following is a good plan:

1. Complaint
2. History
3. Manifestations of pain
4. General oral examination
5. Percussion and palpation
6. Exploration
7. Color
8. Conductivity of temperature

*Read before the Oral Surgery Section of the Second District Dental Society, Brooklyn, N. Y., October 18, 1928.

9. Transillumination
10. Roentgenograms
11. Pulp testing by electric current
12. Bacteriologic examination
13. Histopathologic examination
14. Blood examination
15. Urinalysis
16. Serologic test
17. Differential diagnosis
18. Treatment recommended

A diagnosis should be made only after considering all the various factors and diagnostic methods.

It is very important to cooperate with the physician, as he may supply valuable facts concerning physical condition which may aid in the diagnosis, and his aid is also important during postoperative care.

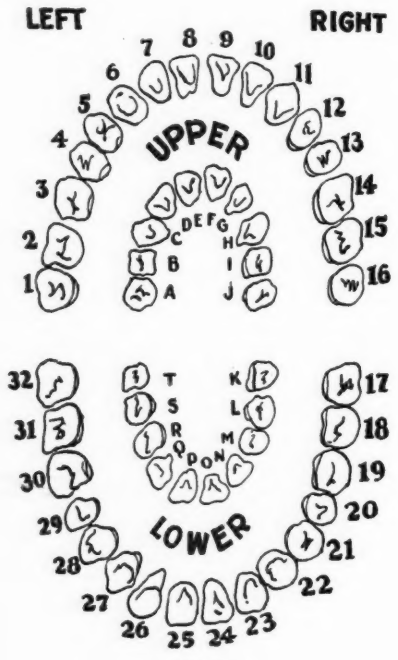


Fig. 1.

A thorough physical examination by the physician may save a great deal of embarrassment in what appears to be even a simple extraction. It is very unwise to operate in the presence of such conditions as diabetes, specific diseases, Vincent's infection, acute infection, septicemia, anemias, leucemia, hemophilia, circulatory and other systemic disorders, without proper control or preparation.

It would be a great advantage if it were practicable in every case to determine the hemoglobin content, red blood count, leucocyte count, differential, clotting and bleeding time, blood pressure, and to have a urinalysis and a serologic test.

In most instances a definite diagnosis can be made, but in certain conditions and especially certain tumors, it is not always possible to make a pre-

operative clinical diagnosis which will be verified by the postoperative specimen or result. In some of these cases it is therefore necessary to make a presumptive diagnosis and later a final diagnosis.

The important thing in tumors is to distinguish benign from malignant. In certain cases it is permissible to remove a peripheral section of a growth for microscopic examination before operation, but when necessary it is best accomplished by a frozen section and operation completed at that time. Where a growth of any kind is removed, a section should be preserved for microscopic study.

ETIOLOGY

Among the causes of swellings and growths of the mouth and adjacent parts, the following should be mentioned:

SWELLINGS OF THE MANDIBLE AND MAXILLAE

- Osteomyelitis
  - Acute
  - Chronic
- Necrosis
- Periosteitis
- Periodontal infection
- Periapical infection
- Abscess
- Tumors
- Cysts
  - Radicular
  - Follicular
  - Residual
  - Cystic adamantinoma
  - Dermoid
- Traumatic injury
- Inflammatory growths
  - Dislocations
  - Leontiasis ossea
  - Acromegaly
  - Osteitis fibrosa (Osteitis fibrosa cystica)
  - Exostosis
  - Myositis ossificans
  - Osteomyelitis
- Mineral or chemical poisoning
- Impacted and unerupted teeth

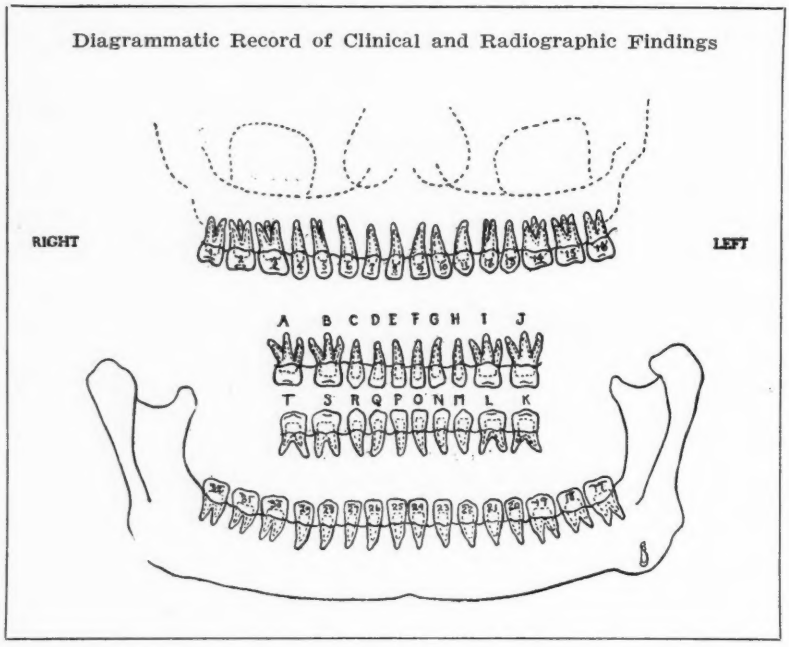
CLINICAL CLASSIFICATION OF BONE TUMORS OF THE MANDIBLE AND MAXILLA

I. Metastatic tumors

II. Periosteal fibrosarcoma (Periosteal sarcoma)

III. Osteogenic tumors

- A. Benign osteogenic tumors:
  1. Osteomas
  2. Fibromas
  3. Chrondromas
  4. Lipoma
  5. Myxoma



Remarks

Treatment Recommended

Fig. 2.

ORAL DIAGNOSIS

Name _____ Date _____

Address _____ Phone _____ Age_____

Referred by Dr. _____

COMPLAINT

Local

General

CASE HISTORY

PHYSICAL EXAMINATION

Cardiovascular

- Pulse _____
- Systolic Pressure _____
- Diastolic Pressure _____
- Pulse Pressure _____
- Heart _____

Temperature _____

LABORATORY FINDINGS

Blood Examination

- Erythrocytes _____
- Leucocytes _____
- Hemoglobin _____
- Clotting Time _____

Cultures _____

Tissue _____

Urinalysis _____

Wassermann _____

GENERAL ORAL CONDITION

Mucous Membrane

Tongue

Saliva

Teeth

Occlusion

Arch

Transillumination:

Fig. 3.

B. Malignant osteogenic tumors (Osteogenic sarcomas)
1. Periosteal
2. Medullary and subperiosteal
3. Sclerosing or ossifying
4. Telangiectatic

IV. Inflammatory Conditions that may simulate tumors of the mandible and maxillae
1. Leontiasis ossea
2. Acromegaly
3. Osteitis fibrosa (Osteitis fibrosa cystica)
4. Exostoses
5. Myositis ossificans
6. Actinomycosis
7. Osteomyelitis (Osteoperiostitis)
a. Traumatic
b. Infectious
Pyogenic
Syphilitic
Tuberculous

V. Benign giant cell tumors

VI. Angioma (benign and malignant)

VII. Myeloma

VIII. Teratoma

ODONTOMAS

I. Epithelial odontoma
Adamantinoma

II. Composite or Mixed
a. Complex
b. Compound follicular
c. Geminated
d. Gestant
e. Dilated

III. Connective tissue odontoma
1. Cementomas
2. Fibrous odontoma

SWELLINGS OF THE PALATE OR ROOF OF THE MOUTH

Abscess
Racemose
Fracture of maxillae
Specific diseases
Syphilis
Tuberculosis
Tumors
Cysts
Periapical infection
Periodontal infection
Impacted and unerupted teeth
Hematoma
Septicemia

SWELLINGS OF THE MAXILLARY SINUS

- Acute suppurative sinusitis
- Chronic suppurative sinusitis
- Chronic hyperplastic sinusitis
- Cysts
- Tumors
  - Lipoma
  - Fibroma
  - Odontoma
  - Osteoma
  - Sarcoma
  - Carcinoma
- Periapical infection
- Periodontal infection
- Impacted and unerupted teeth
- Supernumerary teeth
- Chronic osteomyelitis

SWELLINGS OF THE GUMS AND ALVEOLAR PROCESS

- Periapical infection
  - Acute
  - Chronic
- Abscess
- Tumors
- Cysts
- Periodontal infection
  - Gingivitis
    - a. Acute traumatic
    - b. Chronic
    - c. Systemic
    - d. Gingival abscess
  - Hypertrophy
  - Pericementitis
  - Periodontoclasia
- Specific infectious diseases
  - Syphilis
  - Tuberculosis
  - Actinomycosis
- Impacted and unerupted teeth
- Leucemia
  - Myelogenous
  - Lymphatic
- Hematoma
- Septicemia
- Necrosis
- Osteomyelitis
- Periosteitis
- Supernumerary teeth
- Stomatitis

CLINICAL CLASSIFICATION OF TUMORS, THE GUMS AND SOFT TISSUES OF THE MOUTH

I. Inflammatory conditions that may simulate tumors of the mouth
  1. Hypertrophy
  2. Pyogenic infections
  3. Scar tissue growths (fibrous)
  4. Syphilitic

II. Benign tumors
    1. Papilloma
    2. Adenoma
    3. Fibroma
    4. Lipoma
    5. Neuroma
    6. Myoma
    7. Angioma
        (a) Hemangioma
        (b) Lymphangioma
    8. Benign giant-celled tumor
    9. Mixed cell tumors of the salivary gland (certain types)
    10. Teratoma (certain types)

III. Malignant tumors
    1. Sarcoma (extension or metastisis)
    2. Endothelioma
    3. Mixed cell tumors of the salivary glands (certain types)
    4. Carcinoma
    5. Teratoma (certain types)

SWELLINGS OF THE CHEEK INSIDE THE MOUTH

Mucous cysts
Obstruction of Stenson's duct
Parotid cyst
Tumors
Periapical infection
Periodontal
Abscess
Traumatic injury
Specific diseases
    Syphilis
    Tuberculosis
Stomatitis

SWELLINGS OF THE SALIVARY GLANDS AND THEIR DUCTS

Acute inflammation of the salivary glands and their ducts
Chronic inflammation of the salivary glands and their ducts
Foreign bodies and stones in glands and ducts
Epidemic parotitis (mumps)
Cysts, obstruction of ducts of salivary glands
Mikulicz's disease (pseudohypertrophy)
Tumors
    Adenoma
    Lipoma
    Fibroma
    Angioma
    Myoma
    Neuroma
    Mixed tumors
    Carcinoma
Cysts
Specific diseases

SWELLINGS OF THE FLOOR OF THE MOUTH AND NECK

Lymphadenitis
    Acute
    Chronic

Cellulitis
- Acute
- Chronic

Ludwig's angina
Specific infections
- Syphilis
- Tuberculosis
- Actinomycosis

Tumors
- Carcinoma
- Sarcoma (Metastasis by extension)
- Angioma
- Nevus
- Lipoma
- Papilloma

Sialolithiasis
Mikulicz's disease
Cysts of the soft tissues
- Ranula
- Mucous cysts
- Wharton's Duct
- Incisive gland
- Thyroglossal
- Dermoid

Cysts of the hard tissues
- Radicular cysts
- Follicular

Abscess
Periapical infection
Periodontal infection
Septicemia
Impacted and unerupted teeth
Fractures of mandible
Traumatic injury
Stomatitis

SWELLINGS OF THE THROAT

Acute catarrhal tonsillitis
Acute follicular tonsillitis
Phlegmonous tonsillitis; Periotonsillar abscess; Quinsy
Chronic hypertrophy of the tonsils
Chronic tonsillitis
Calculi and foreign bodies in the tonsils
Adenoid growths
Acute pharyngitis
Retropharyngeal abscess
Inflammation of the soft palate and uvula
Peritonsillar abscess
Tumors
- Papilloma
- Fibroma
- Adenoma
- Lipoma
- Chrondroma
- Carcinoma

Cysts
Specific diseases

SWELLINGS OF THE TONGUE

Macroglossia
Injuries
Mercurialism
Cretinism
Mongolian idiocy
Acromegaly
Stomatitis
Myxedema
Tumors
    Angioma
    Papilloma
    Verruca (wart)
    Lipoma
    Fibroma
    Carcinoma
Cysts
Angioneurotic edema
Lymphangeomatous microglossia
Glossitis
Ludwig's angina
Actinomycosis
Syphilis
Tuberculosis
Raynaud's disease
Pernicious anemia
Stomatitis
Wounds and burns

SWELLINGS OF THE LIPS

Trauma
Bites and stings
Abscess, carbuncle and furuncle
Angioneurotic edema
Cretinism
Elephantiasis
Macrocheilia
Stomatitis
Mucous cysts
Tumors
    Papilloma
    Verruca (wart)
    Angioma
    Nevus (angioma)
    Carcinoma
Syphilis (chancre)
Wart (verruca)
Periapical infection
Periodontal infection
Adenoids
Epilepsy
Worms
Acromegaly
Traumatic injury
Myxedema

TREATMENT

In swellings and growths, it is important to remove the cause and establish surgical intervention where necessary.

Where surgical intervention is necessary we must realize that oral surgery is divided arbitrarily into major and minor surgery, without any definite or well defined division point.

Ivy defines oral surgery as follows: "It includes surgery of the mouth and jaw bones and of complications arising in adjacent structures from injury or disease of these parts."

Harrison states: "It is the ability and not the degree that fits one for this work." As to whether any individual dentist should confine his work to minor oral surgery or do both minor and major oral surgery, I think depends upon his training, experience, ability, locality, and circumstances.

Whether one does minor or major oral surgery or does not attempt either, we are all particularly interested in diagnosis of all diseases of the mouth. The treatment of all disease is founded upon diagnosis. Owing to the difficulty encountered in the recognition of some diseases, we divide the diagnosis into presumptive diagnosis and final diagnosis.

In the treatment of septicemia, the requirements are rest, building up general resistance, avoiding removal of teeth or any operation, excepting incision for drainage where necessary, intravenous injection of mercurochrome, vaccines, or transfusion as the case may indicate. Local operations are contraindicated in leucemias, and such general treatment as radiation should be begun. Hematomas usually recover without incision.

Fractures require reduction, fixation, and care of tissues. Acute osteomyelitis requires free incision and drainage, but no bone surgery. In chronic osteomyelitis, following the acute condition, the sequestra should be removed as formed. In spontaneous chronic osteomyelitis, complete surgery is indicated. Surgery is indicated in chronic osteitis.

The following general lines of treatment are usually applicable to tumors:

1. Lipoma—surgical
2. Osteoma—surgical
3. Odontoma—surgical
4. Neuroma—surgical
5. Myoma—surgical
6. Mixed cell tumors of the salivary glands—surgical
7. Teratoma—surgical
8. Benign giant cell—surgery and cautery or electrothermy
9. Adenoma—surgical and cautery or electrothermy
10. Papilloma—surgical or electrothermic
11. Fibroma—surgical or electrothermic
12. Myxoma—surgical or electrothermic
13. Angioma—carbon dioxide snow, or electrothermic
14. Endothelioma—surgical or electrothermic
15. Carcinoma—surgery, fulguration, radium, and x-ray
16. Sarcoma—surgery and electrothermy in earlier stages; electrothermy, radium and x-ray in later stages.

There can be no standardized method for the care of painful or acute pyogenic conditions of the mouth or sore teeth or teeth with acute symptoms of

infection. Each case is necessarily handled according to the existing conditions, and judgment and experience on the part of the operator are necessary.

In the beginning stage of an acute swelling, I apply cold packs. If the swelling occurs in the presence of this treatment, alternating hot and cold packs are then applied, and if the swelling continues more than six hours, hot magnesium sulphate packs are applied to the face continuously, which will either abort or localize the infection. A hot saline mouth wash is prescribed. If swelling is not better in twenty-four hours, I recommend early incision except for abscesses or swellings of the upper lip, which should be left alone until they localize. An incision is made with a sharp knife and the wound spread with a hemostat without undue traumatism, and hot magnesium sulphate packs again applied to the face. Where the swelling involves teeth and extraction is indicated, it is usually best to attempt to tide the condition past the acute stage or reduce the acute symptoms before operation. A sore throat, a cold, a swollen lymph gland, a sore tooth, or inflamed gum, are all danger signals, and care should be exercised in operating in their presence. In many cases, an attempt at treatment to reduce the acute condition will fail, but at least nature may be given an opportunity to form antibodies and localize the infection.

I very rarely attempt to remove impacted third molars when sore or acute because of the danger of involvement of the throat, peritonsillar abscesses, etc. The tonsils should always be examined carefully, as many cases of postoperative complications are due to stirring up infection in the presence of infected tonsils. The cooperation of a rhinologist is often of the greatest value in throat conditions, as well as complicating conditions of the maxillary sinus. There is danger in removing teeth bordering the maxillary sinus when acute because of the danger of sinus infection, pansinusitis, and brain abscess, as acute infection may travel fast.

The third molar area is best treated by cleaning under the flap of soft tissues with peroxide of hydrogen and irrigating with mild antiseptic solution and placing a pledget of cotton under the flap, saturated with 5 per cent mercurochrome, and seeing the patient twice each day, if necessary. It is well to defer the operation until all soreness disappears. In many cases of acute mandibular third molar regions, it will be found that a maxillary third molar is elongated or out of alignment and irritating the gum over the mandibular molar, when the mouth is closed. In these cases, it is well to remove the maxillary third molar first, and defer removing the mandibular molar until later.

The danger of removing teeth in the presence of acute conditions is not because of bone disturbances, but more because of cellulitis, septicemia and soft tissue involvement. I would not hesitate to remove teeth during a bone disease whenever indicated, but all traumatism should be avoided.

In many cases of soreness, swelling, or acute condition, when the tooth feels soggy and pus is around it, there is no good reason why it should not be removed, as it will make the best drain. The removal of teeth is more to be feared when the removal will not drain the acute area, but will simply stir up the infection and produce a larger field for the infection.

MAXILLOFACIAL PROSTHESIS*

Surgical Scaffolding

By Roy L. Bgdine, D.D.S., Washington, D. C.
Captain, Dental Corps, U. S. Army

(Continued from page 56, January issue.)

THE function of the prosthodontist, as an assistant to the plastic surgeon, is to provide mechanical forms or molds over which the surgeon can build the tissues to the required contour, and which will support these tissues during the healing process and prevent their contraction. Plastic surgery in the maxillofacial field is concerned frequently in bridging over the natural cavities of the face which offer no support for the transplanted tissues, thus differing from plastic operations in other parts of the body.

In eliminating adhesions of scar tissue within the oral cavity and restoring the labial or buccal sulci, the epithelial inlay requires a support by means of a stent, which serves the double purpose of keeping the inlay in contact with the cut surfaces and preserving the space gained by preventing contraction of the tissues. In rhinoplasty, cheiloplasty, and blepharoplasty artificial supports are frequently necessary, both for the convenience of the surgeon at the time of operation and for the maintenance of the required contour.

These supports or molds are frequently called upon to resist considerable tension from the action of the musculature, hence they should be attached to a rigid foundation. The most rigid anchorage in the region of the face consists of the upper teeth with their natural support in the alveolus. The next most favorable surface for the anchorage of any apparatus, and the one which is used when the maxillary teeth are for any reason not available, is the cranium. The size of the cranium permits of the distribution of stresses over a large area, and its shape provides resistance to forces applied from almost all directions.

In the designing of these appliances for any case, it is essential that there be the closest cooperation between the surgeon and the prosthodontist, the surgeon outlining the function to be required of the apparatus and the prosthodontist devising a mechanism which will perform this function. The author has been fortunate in having been associated with a maxillofacial surgeon, Robert H. Ivy, who is also a graduate in dentistry, and with Joseph D. Eby, whose orthodontic experience has made him a master of mechanical principles. In our association they frequently were the mind and the author only the hands in the construction of the appliances. Much of the apparatus described in the following pages has been previously shown in connection with their writings on the surgical and orthodontic aspects of the work and

*From the Department of Prosthesis, Army Dental School, Washington, D. C.

some of the cases have also been described in the History of the Medical Department in the World War. The author was only concerned with the mechanics of construction of the appliances, and will confine his discussion as closely as possible to that aspect of the work.

EPITHELIAL INLAY APPARATUS

Epithelial inlays are usually applied by means of a stent formed of impression compound which is molded into the cavity formed by the surgical incision. The stent should be held rigid in its proper position by means of some mechanism which attaches it to the teeth. This apparatus should be as

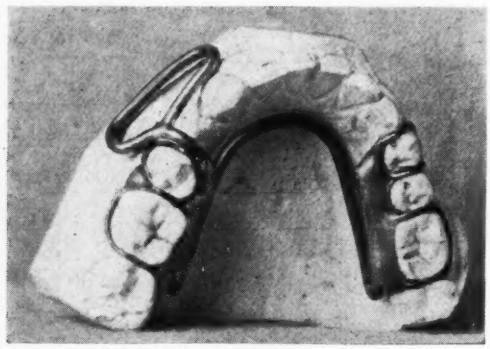


Fig. 66.—Epithelial inlay stent retainer, similar to Jackson orthodontic appliance. (Eby.)

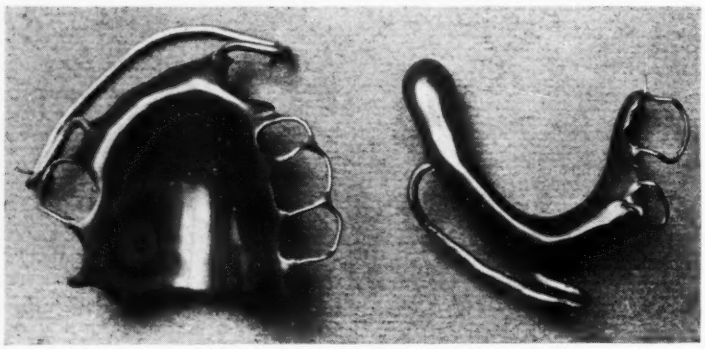


Fig. 67.—Stent retainer attached to vulcanite denture base retained by Jackson crib clasps.

simple as possible, easily inserted in order that the operation will not be needlessly prolonged, and readily removed for inspection or hygiene without disturbing the graft.

In those cases in which a sufficient number of teeth are present, a mechanism similar to the Jackson orthodontia appliance is probably the simplest and most easily constructed, and is at the same time very efficient. This type of apparatus can be instantly inserted or removed, affords a rigid anchorage for the stent, does not damage the abutment teeth, and is easily cleansed.

Since this type of appliance will be worn for a very short time, it can be constructed of nickel-silver wire at the minimum expense. The only addition

to the customary orthodontic mechanism consists of a loop of 12 gauge nickel-silver wire attached to the body of the appliance and contoured so as to dip down into the central portion of the site of the proposed operation. This wire provides the attachment for the compound which forms the stent (Fig. 66). The technic for the construction of the Jackson orthodontia appliance is given in detail in standard textbooks on the subject, and need not be repeated here.

The palatal or lingual portion of this apparatus may be constructed entirely of vulcanite, if preferred, with equal efficiency and comfort to the patient; and unless one has had experience in the construction of the Jackson appliance and possesses considerable skill with the soldering iron this would probably be the easier technic (Fig. 67). If a partial denture is already worn by the patient, the compound stent may be attached directly to the

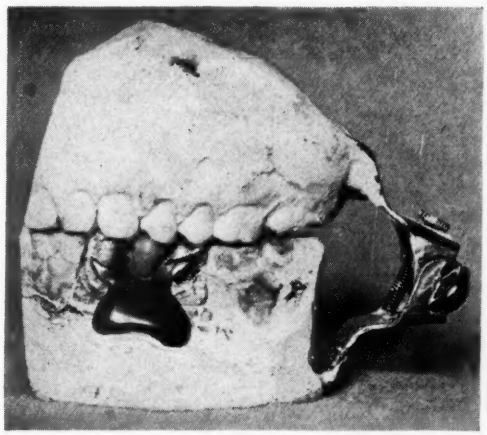


Fig. 68.—Permanent retaining mold attached to the buccal flange of a denture.

facial flange of the denture, without adding any wire loop or changing the denture in any way. Later this compound may be reproduced in vulcanite for permanent retention.

In edentulous cases the denture previously worn may be sufficiently stable to support the stent, which may be moulded directly to its facial flange. This procedure would, however, be feasible in the case of comparatively small inlays only, such as those following the excision of the labial or lingual frenum, or the detachment of cicatricial tissue.

In more extensive operations in edentulous cases, especially in the upper arch, the stent would require some form of extraoral anchorage, usually cranial. The intraoral apparatus may be in the particular form required; either a pseudodenture similar to that shown in Fig. 29* for the retention of a fractured edentulous maxilla, or perhaps a metal tray which will support the required mass of compound, or, in some cases, simply a wire loop which is contoured to extend into the site of the proposed operation. Wire arms would be attached to the intraoral apparatus, and would emerge from the

*Inter. Jour. Ortho., Oral Surg. and Radiog., December, 1928.

angles of the mouth and pass backward, parallel to the cheeks, and be provided with straps attaching them to an orthopedic head-cap, exactly the same as in the case of the maxillary fracture splint.

In the lower arch, the intraoral apparatus would be provided with similar arms, and would be retained in position by means of submental bandages after the original Kingsley principle, or by springs connected to a chin cap acting in the same manner as the familiar cotton roll holder. If a pseudo-denture was used to retain the stent, the immobilization of the mandible against the maxilla by means of bandages, with the occlusal surface indentations of the denture occluding with the cusps of the upper teeth would furnish sufficient retention.

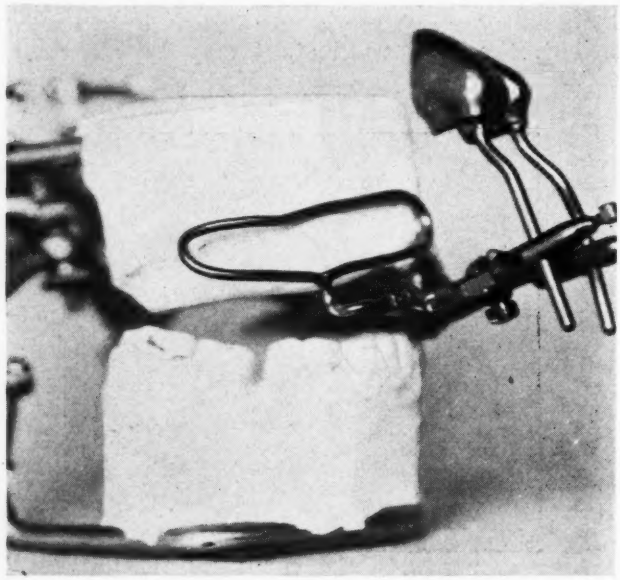


Fig. 69.—Scaffolding for rhinoplasty attached to a cast silver jacket encapsulating the maxillary teeth. A wire loop for the support of an epithelial inlay stent was also attached to this jacket.

In most cases of epithelial inlays, a permanent appliance is essential to prevent shrinkage of the tissue. This usually takes the form of a reproduction in vulcanite of the compound stent, and it usually forms a part of the facial flange of a denture or removable bridge (Fig. 68).

RHINOPLASTIC SCAFFOLDING

In operations designed for the restoration of missing portions of the lower nose, the surgeon will frequently find a supporting framework very valuable. Over this framework the flaps may be molded, and the contour will be retained and the shrinkage of the tissue prevented to a large degree until the healing process is complete. Owing to its absolute rigidity, and proximity to the field of operation, dental anchorage from the maxillary teeth is usually chosen for this purpose whenever a sufficient number of teeth are available.

The scaffolding may be attached either to a cast silver jacket encapsulating all of the maxillary teeth and cemented to them (Fig. 69), or to four

orthodontic bands cemented to the upper first premolar and first molar teeth (Fig. 70). If the strain on the appliance will be slight, the latter method is to be preferred on account of its simplicity of construction and lack of interference with occlusion or mastication.

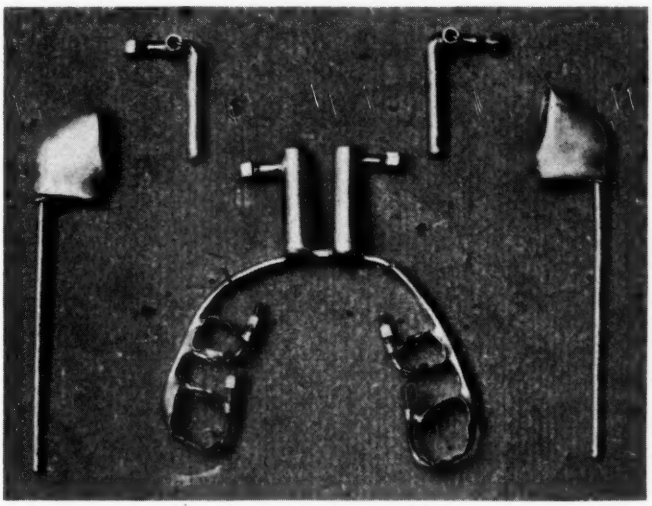


Fig. 70.—Details of construction of a rhinoplastic scaffold attached to orthodontic bands on the maxillary teeth.

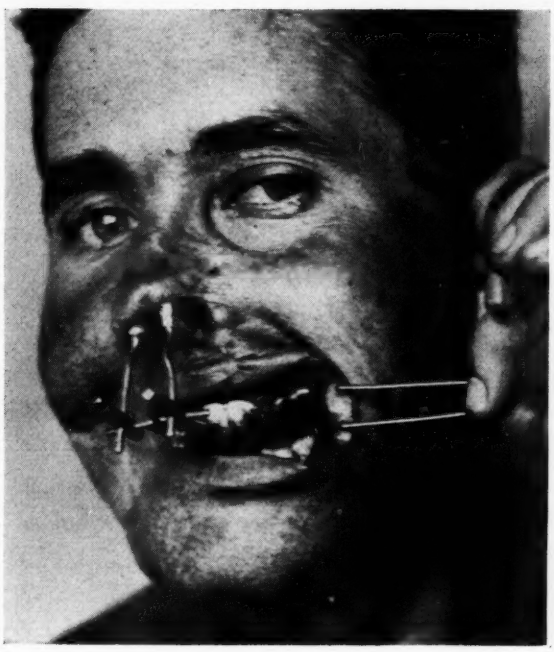


Fig. 71.—Rhinoplastic scaffold in position.

The appliance is constructed as follows: If the cast jacket is to be used, the technic previously given for splint jackets should be followed. If bands are chosen, they are adapted to the teeth and a plaster impression is taken with the bands in position. This impression is then poured in soldering in-

vestment, giving a model with the bands in their proper position and relation. A heavy oval nickel arch bar is then adjusted to fit against the facial surfaces of the bands, passing across the anterior portion of the arch with its lower edge just even with the incisal edges of the anterior teeth.

To this bar, at the median line, or to the cast jacket if that be used, solder two 7x10 gauge round nickel-silver tubes about one inch in length, so that they will project horizontally forward between the lips. Provide set screws at the sides of these tubes by soldering a short length of smaller tubing at right angles to them near the outer end, threading its inner surface to fit a small screw.

Fig. 72.—Rhinoplastic scaffold and intraoral pads attached to an orthopedic plaster head-cap when dental support is not available.

Cut pieces of 7 gauge round wire slightly longer than the tubes, and solder at right angles to one end a piece of 8x12 round tubing 10 mm. long. Provide a set screw to this tube as before. This part of the appliance provides anteroposterior adjustment and also vertical adjustment. By rotating the wires in the projecting tubes lateral movement is also secured, but this must be accompanied by bending the support wires which hold the molds to keep the molds vertical.

The molds are shaped as desired from one thickness of base-plate wax, and are made hollow to permit the passage of air. In operations upon the

alae, the small molds shown are sufficient, and the constriction at their lower ends aids in preventing contraction of the tissue. In more extensive operations, longer molds would be required, and should be shaped to meet the requirements of the individual case. The molds are cast in silver.

Attach these molds to the ends of pieces of 12 gauge nickel-silver wire of the requisite length, and the appliance is finished. This apparatus is fully adjustable; each side may be adjusted without disturbing the other side, and it is amply rigid for any plastic operation. It does not interfere with mastication, and is well tolerated by the patient (Fig. 71).

Fig. 73.—Apparatus for the support of a cartilage implant which showed a tendency to change position. A forehead plate gives sufficient foundation for the slight force necessary.

In edentulous cases recourse must be had to cranial anchorage, and it is believed that the orthopedic plaster head-cap provides the most stable as well as the most comfortable foundation of anything yet devised. In constructing the head-cap for this purpose, the straps are omitted, and a metal plate, provided with vertical tubes and set screws is buried in the arterior margin of the cap (Fig. 72). The nasal molds are attached to wires fitted into these tubes, with such additional adjustments as are considered necessary. Usually the vertical adjustment is the only one required, as additional adjustments can be made by bending the wires with clasp bending forceps.

In operations on the upper portion of the nose only, such as cartilage implants, supports are seldom necessary. If, however, there is any tendency toward a shifting of position of the cartilage, an apparatus such as that shown

in Fig. 73 would assist in its immobilization. Since only slight force would be required in such a case, a plate fitted to the forehead and held in place by webbing straps would be all that would be needed for anchorage.

CHEILOPLASTIC PADS

The repair of injuries to the lips and cheeks frequently demands some type of mechanical support for the transplanted tissues. This support is required both for the convenience of the surgeon at the time of the opera-

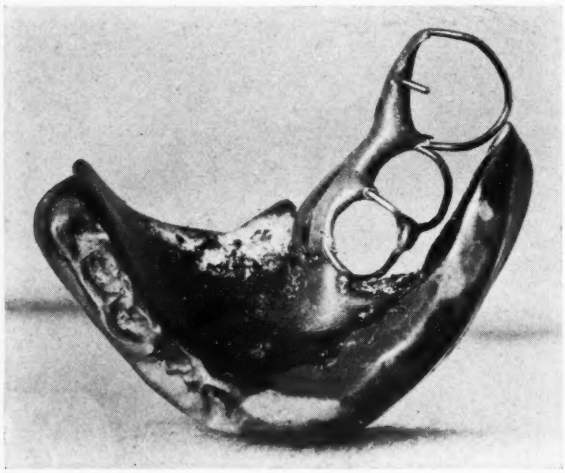


Fig. 74.—Cheiloplastic pad attached to the remaining mandibular teeth by Jackson crib clasps.

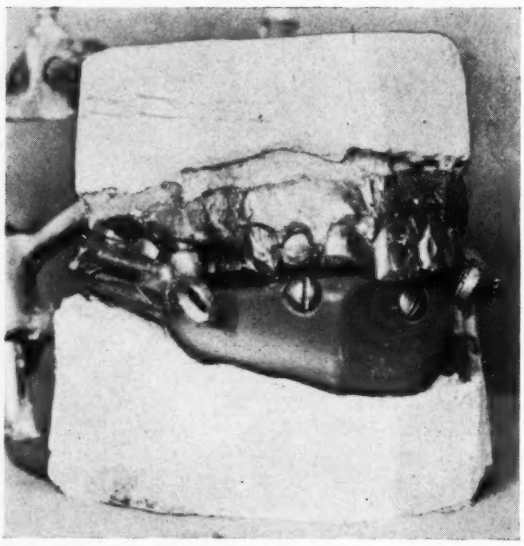


Fig. 75.—Cheiloplastic pad attached to a fracture splint.

tion and to preserve the contour and prevent excessive contraction of the tissues during the process of repair. The loss of the natural bony framework would otherwise allow the tissues to assume an entirely unnatural position, with resultant deformity and unbalance of the features.

The appliance required is simply a duplication as far as possible of the natural bony framework, and a restoration of the missing parts of the dental and maxillary tissues. This appliance would be attached to the same stable foundation that is used in all maxillofacial work, the teeth. Wherever sufficient teeth are present, the appliance should be attached to them by the same

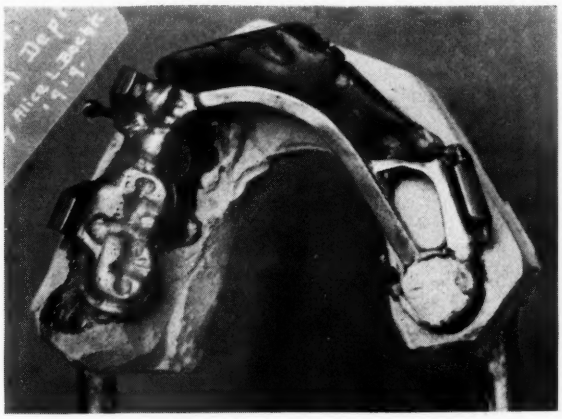


Fig. 76.—Occlusal view of the same splint.

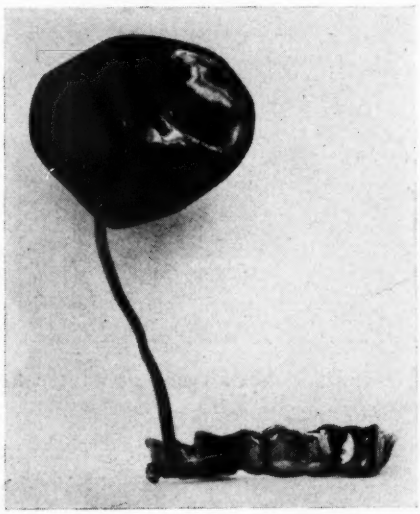


*Fig. 77.—Pressure pad for the reshaping of tissue through atrophy, attached to a cast silver jacket encapsulating the maxillary teeth.

means that is used in any partial denture, usually clasps, so that it may be easily and quickly removed and replaced when desired.

The body of the appliance may be constructed of vulcanite, and shaped to simulate an artificial denture, and provided with the necessary clasps for retention (Fig. 74). The pads or molds for tissue support may either be

*Figs. 77 to 81 show appliances constructed by the author for Dr. Edmund B. Spaeth, and published by him in his book on "Ophthalmic Plastic Surgery."

integral with the denture, or constructed separately and attached to the denture by screws or bolts.

The sectional compound impression technic is valuable in the construction of this type of appliance, as the pads may be molded in compound at the same time that the impression is taken, either as a part of the basic impression or of the face-piece. While the compound is soft, massage over the lips and cheeks will mold it to the required fullness and contour with the minimum of difficulty.

Very frequently the soft tissue injuries will be combined with fractures or other bony injuries which will require the use of splints, in which case

Fig. 78.—The pressure atrophy apparatus in situ.

the pads will be attached to the splint in such manner as will allow their removal or adjustment without disturbing the jaw relations. Vulcanite pads, attached to the splints with screws, will usually be the most easily constructed, and in addition will be smooth, cleanly and compatible with the tissues (Figs. 75 and 76).

If these pads are vulcanized directly against the cast silver splint, it must be thoroughly protected against the corrosive action of the hydrogen sulphide liberated during the vulcanizing process. Coating the silver jackets with cellulose acetate or airplane "dope" and wrapping them carefully with tin foil, will give the required protection. The nickel silver wires and bars will need no protection.

If sufficient teeth are not present or available, recourse must be had to

cranial anchorage as in other types of appliances. The apparatus described previously for the support of the rhinoplastic scaffolding (Fig. 72) would give the required support. The wires from the head-cap should be extended and contoured to enter the mouth, where they would be attached to the indicated type of pad, probably one constructed of vulcanite similar to a denture. The pad might be made of compound if it will not be worn for a very long period.

Fig. 79.—Pressure atrophy apparatus for the reshaping of a reconstructed eyelid. Drawing the two parts of the pad together produced a thinning of the lid.

Fig. 80.—The apparatus in situ.

Fig. 81.—Lateral view of the same apparatus.

BLEPHAROPLASTIC APPLIANCES

Operations about the eye do not usually require the use of mechanical supports for the molds or stents which may be used. In some instances, however, an apparatus for the reshaping of the transplanted tissues by means

of apparatus which causes constant pressure with resultant pressure atrophy may afford gratifying results. The possibilities of this type of appliance do not seem to have been exhaustively considered, but Dr. Edmund B. Spaeth in his book on "Opthalmic Plastic Surgery" reports a number of successful cases following the use of appliances constructed for him by the author.

Dental anchorage was used, on account of its absolute rigidity and proximity to the field, cast silver jackets being constructed to encapsulate all of the maxillary teeth. An 8x12 gauge square nickel-silver tube, about one inch long was soldered to the labial surface of the jacket, so placed that it emerged from the mouth about 5 mm. from the angle on the same side as the eye to be operated on. A set screw was provided at the outer end of this tube. Into this tube a 12 gauge nickel-silver wire was fitted, which was contoured to pass upward parallel to the face until it reached the field where it was to support the pressure pad.

The pad was formed from a pattern of impression compound, softened by heat and molded to the requisite shape and size, with its margins thick

Fig. 82.—Trismus appliance with a jack-screw for direct intermittent force, and springs for constant force (Eby).

and well rounded to prevent cutting into the underlying tissues. A short tube, the same size as the wire, and provided with a set screw, was imbedded in the compound at right angles to the facial surface, and then the pad was reproduced in vulcanite. The wire was then bent to engage the tube in the pad and to give the required pressure. This pressure must be slight at first, increasing gradually as progress is made. The pressure is varied by changing the arch of the wire by bending it with clasp-bending pliers.

Figs. 77 and 78 illustrate an appliance designed to reshape a graft which was used to repair a defect along the left side of the nose. The graft obliterated the line of demarcation along the ala nasi and the pad was so formed as to restore this outline. Figs. 79, 80 and 81 show an appliance which was designed to enlarge the orbital socket and at the same time thin out a reconstructed upper lid. This pressure pad was constructed in two parts, the inner one being shaped to fit the socket and the inner surface of the upper lid. Two threaded posts were imbedded into this inner pad and so placed that they would emerge between the lids. The second pad was made to fit the outer surface of the lids, having two holes to fit over the threaded posts

of the inner pad and also a tube with a set screw to give attachment to the wire which projected up from the dental anchorage jacket. In using this apparatus, the two pads were placed in position, with the eyelids between them, and nuts were placed upon the threaded posts. As these nuts were tightened and the pads gradually brought more closely together, the tissues between them were compressed and eventually thinned and flattened.

Further studies along this line would probably reveal similar instances in which the prosthodontist could be of assistance to the plastic surgeon.

TRISMUS APPARATUS

A type of appliance which is frequently demanded in maxillofacial work but which does not exactly come under the head of either surgical scaffolding or of splints, is that for the treatment of limitation of motion of the mandible.

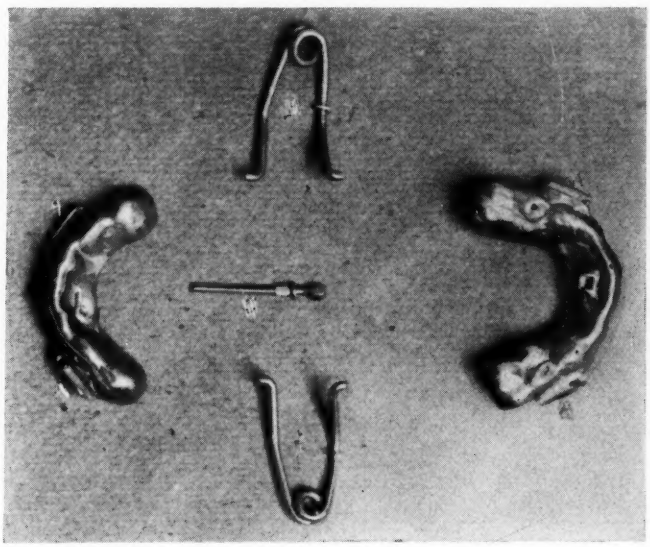


Fig. 83.—Trismus apparatus disassembled, showing the details of construction.

Various means for the application of intermaxillary force have been employed, such as wooden tapering screws, rubber blocks and spring clothespins, but for the more stubborn cases a more positive appliance must be constructed which will permit the application of a greater force and distribute the force over as many teeth as possible.

The appliance shown in Figs. 82, 83 and 84 was constructed after the designs of Dr. Jos. D. Eby. It permits the use of the considerable direct force produced by a jack-screw placed at the point of greatest leverage, and also the constant force, variable at will, of a pair of wire springs. The force produced is distributed over all of the teeth, maxillary and mandibular.

This apparatus consists of cast silver jackets shaped to fit loosely over the maxillary and mandibular teeth. By adapting several layers of tin foil over the models, prior to fitting the wax patterns, the jackets can be made

enough larger than the teeth that the patient can easily remove and replace them when desired.

A 12 gauge square socket, opening downward, is attached to the lingual surface of the upper jacket at the median line. A 12 gauge round tube is attached to the facial surface of the lower jacket at the median line, opening directly under the square socket on the upper jacket. A 12 gauge threaded wire, with a square head, and provided with an adjusting nut, fits into the tube on the lower jacket and is prevented from rotating by the engagement of the square head into the square socket of the upper jacket. By tightening the adjusting nut against the upper end of the tube, a direct force may be applied; this is usually done once daily.

To provide for the constant force, half-tubes or troughs are cast integral with the jackets, placed on either side in the buccal region, and opening

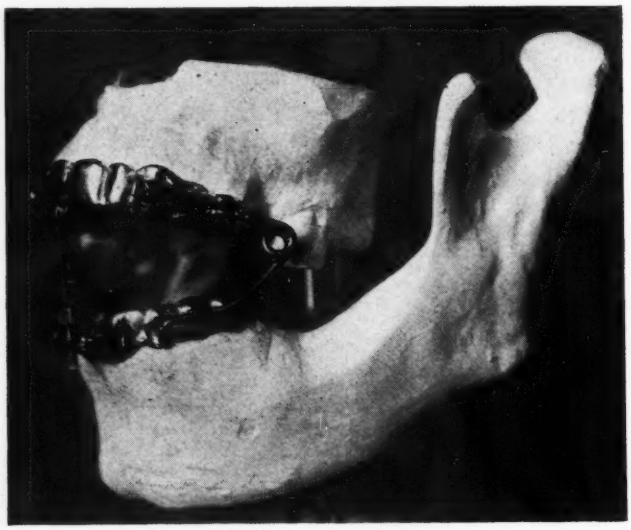


Fig. 84.—Trismus apparatus in position.

occlusally; that is, the half-tubes on the upper jacket open downward and those on the lower jacket open upward. The springs are formed from hard nickel-silver wire, 12 or 14 gauge, and have right angle extensions at each end which engage in holes at the anterior ends of the half-tubes, preventing accidental dislodgement. The appliances with the springs in place are worn constantly, being removed and replaced by the patient himself at meal times.

The great disadvantage of this type of appliance is the time required for its construction, and the necessity of constructing a special appliance for each patient. A more convenient apparatus, and one which is fully as efficient as far as the constant force is concerned, is the one designed by Col. Robert H. Ivy. It consists of two plates similar in shape to shallow impression trays, one fitting each arch. To the upper tray extraoral arms are attached, which emerge from the angles of the mouth and pass backwards parallel to the cheeks to a point opposite the center of the tray, whence they

are bent downwards about three inches, terminating in hooks. Similar arms are attached to the lower tray, with the exception that these arms extend horizontally backward parallel to the cheeks and terminate in hooks positioned exactly over the hooks on the upper arms. Elastic ligatures stretched between the upper and lower hooks furnish the required opening force. This apparatus may be kept on hand in several sizes and be available for any case which presents.

NOTE: This is the fourth of a series of articles by Captain Bodine. The next will appear in an early issue.

DEPARTMENT OF
DENTAL AND ORAL RADIOGRAPHY

Edited By
Clarence O. Simpson, M.D., D.D.S., F.A.C.D.,
and Howard R. Raper, D.D.S., F.A.C.D.

RADIOGRAPHIC EXAMINATION FOR ORTHODONTIC DIAGNOSIS AND TREATMENT

By Clarence O. Simpson, M.D., D.D.S., St. Louis, Mo.

IN VIEW of the many essays, discussions, and exhibits on radiography which have been presented to orthodontists, it would seem unnecessary to review the subject. However, from a rather intimate association with orthodontists, it is evident that they still neglect this essential service. Some of the usual explanations of orthodontists for not having adequate radiographic examinations are: (1) The parents may object to the additional expense of the radiodontic examination. (2) We should radiograph all of our patients, but you know how it is when you do not suspect anything, it is neglected. (3) We make the radiographic examination in our office and do not get very clear pictures, so please tell me where the tooth is located—or if it is a tooth.

Neither of these excuses is a valid reason for not making routine radiographic examinations for orthodontic diagnosis. Parents might object to unnecessary expense, but if they are told that there are many obscure factors which make diagnosis uncertain and jeopardize treatment, they would understand the advantages of radiographic examinations. If this explanation was emphasized by the statement that a radiographic examination was imperative in the preliminary study of conditions to render proper service, there would be no opportunity for objection. Furthermore, the few dollars expended for a radiodontic examination are insignificant in proportion to the chance of complicating a treatment for which several hundred dollars will be paid. Orthodontists who do not utilize modern diagnostic methods, either have not the knowledge to appreciate the advantages offered, or from mercenary motives follow the line of least resistance in securing patients and fees. Orthodontists who do realize the importance of accurate diagnosis, but neglect radiographic examinations for "hunch" diagnoses are assuming, and subjecting their patients to avoidable risks. Radiographic examinations reveal unsuspected anomalies in a sufficient proportion of orthodontic cases to demand them as a routine procedure, and are of almost equal importance as a pre-

cautionary measure in excluding anomalous factors. In dealing with an abnormal dentition, it is unsafe and illogical to guess at the degree of abnormality.

Orthodontists who radiograph their patients, or entrust the examination to an assistant without obtaining adequate information, are fostering a deception on their patients and themselves. Incompetent radiography may not reveal the essential information, or it may so distort the evidence that it will be misleading. Sharp definition is not so essential in radiographs for orthodontists as for other diagnostic purposes, but this feature is overbalanced by the intractibility and hypersensitiveness of young subjects. Therefore it should be advantageous to orthodontists and more comfortable for their pa-

Fig. 3.—Showing pointer swung out of the way and the tube properly placed to radiograph the maxillary incisor region. (Waugh.)

tients, to have the radiodontic examinations made by some one having special skill in the practice. There is considerable difficulty in adapting film packets in mouths of children, and even more in retaining the packets and maintaining immobility during the exposures. These difficulties render the examiations the most exacting in radiodontia, so ingenuity, dexterity, and technical proficiency are required to obtain satisfactory results. Orthodontists who crave to add this harassing conflict with their patients to an already arduous practice should qualify themselves to perform the service in conformity with radiodontic standards.

This reference to radiodontic standards introduces the subject which created the perturbation and inspiration for this article. In the August 1928 number of the INTERNATIONAL JOURNAL OF ORTHODONTIA, ORAL SURGERY, AND

RADIOGRAPHY, Dr. Leuman M. Waugh presented illustrations and descriptions of "Radiographic Positions for Standard Routine Orthodontic Examinations of the Teeth and Jaws." Simultaneous with this publication, Mr. Will Rogers was waging an intensive presidential campaign on an "anti-bunk" platform, which had more than a chronologic relation to Dr. Waugh's presentation. Mr. Rogers' success in winning the unanimous silent vote, is sufficient encouragement to carry his principles into the field of orthoradiodontic literature, since a critic in his most optimistic mood can expect no greater reward than silent approbation. Although it grieves the writer to take issue with Dr. Waugh, personal friendship must not be permitted to obstruct profes-

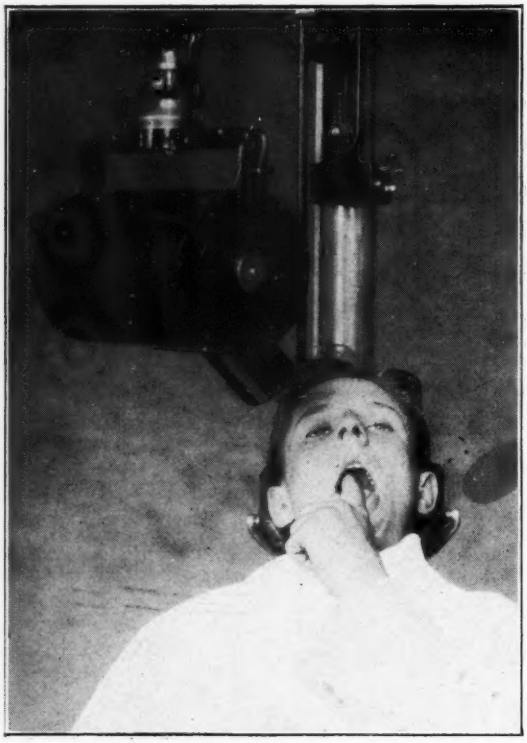


Fig. 4.—Tube placed for right maxillary canine and premolar region. (Waugh.)

sional progress. Had Dr. Waugh entitled his presentation as "my method of radiographic examination" or "a demonstration of a shock-proof radiographic unit" there would be no basis for controversy. However, when he applies such a dogmatic word as "standard" he incurs criticism, and the appended footnote "Read before the First International Orthodontic Congress" suggests the possible disturbing influence of his demonstration upon disorganized European countries. Doubtless Dr. Waugh is able to radiograph his patients with no angulation system other than intuition, but genius of that magnitude only discourages ordinary mortals who require some systematic guide. The purpose in describing a technical procedure should be to aid others in performing the operation easier and better. In applying this test to Dr. Waugh's description, it would prove perplexing and inefficient rather

than helpful. As a voluntary guardian of orthodontists in their radiographic destiny, the writer cannot permit Dr. Waugh's diverting suggestions to pass unchallenged.

In Fig. 3 Dr. Waugh illustrates the pose for the maxillary incisor region, with the head reclined to an uncomfortable degree which offers none of the anatomic base lines for angulation. The hand which retains the film packet with the thumb has no rest, or support to steady it as required even by adult subjects. The central rays are directed at an angle of only about 20 degrees above the occlusal plane, whereas 45 degrees is the average required for young subjects. This indefinite pose and incorrect angulation injects hopeless error into a process which has been precisely described, and proved correct. If the

Fig. 14.—Tube placed for occlusal view. Large size film is held between the teeth. (Waugh.)

head is posed so the maxillary occlusal plane is approximately horizontal, and the central rays are directed parallel with the sagittal plane at an angle of 47 degrees, an acceptable image of the incisors will be projected for every young subject.

Again in Fig. 4 the pose is neither erect nor prone, and places the teeth in a plane which is diagonal to both the horizontal and vertical movements of the tube so that any calibrations for angle calculation are nullified. In this pose, to determine the direction of the central rays, their course would have to be charted by an experienced navigator with a sextant and an induction compass. For no reason unless to demonstrate versatility, the film packet is being retained by the index finger, which is awkward in the maxillary regions. By posing the head so the occlusal plane of the maxillary teeth is

horizontal and directing the central rays midway the canine root at an angle of 50 degrees the examination of this region for children is simplified.

When Dr. Rodriguez Ottolengui admits that anyone originates anything in dentistry, it is a distinction to be cherished, and defended against triflers. Since he has publicly credited me with the introduction of the occlusal view radiographic examination of the maxillae, the following discussion of the requirements should be a reasonable prerogative. In Fig. 14, the tube with a maximum capacity of 45 kilovolts is suspended over the subject's head, and the rays directed downward through the frontal bone. The legend states that a large size film is held between the teeth for an occlusal view, but does not specify the magic qualities of a film which will register clear images from the unintensified radiation produced by 45 kilovolts. Even with

Fig. 17.—Extraoral view. Tube placed for lateral view of right side. The half of the film previously exposed for left side is now protected with the lead sheet and the unexposed half is now used. Thus both sides are shown on a 5x7 inch film or plate.

For quick and easy routine radiograms, especially of children under eight years, only four exposures are necessary for a preliminary examination, namely, two extraoral lateral plates and two intraoral anterior films. Additional exposures must be made of any questionable areas from, at least, three angles. (Waugh.)

extra-fast films 65 kilovolts is required to adequately penetrate the dense cranial bones, so this illustration is a deceptive gesture. Since dentists seem doomed to "fliver" x-ray machines because of parking facilities, a method for obtaining occlusal views with 45 kilovolt equipment will be described in a subsequent article.

Fig. 17 illustrates an extraoral examination with the subject in a semi-reclining position which renders angulation a precarious guess. The target-film distance appears to be about 15 inches which produces excessive distor-

tion of the image, when with this apparatus the distance could be increased 30 inches. The position of the tube indicates that the anteroposterior angle of projection is far from perpendicular to the cassette, which produces additional distortion. Extraoral examinations may be made accurately by keeping the sagittal plane vertical, directing the rays perpendicular to the cassette anteroposteriorly and 25 degrees below horizontal, and placing the region desired in contact with the cassette. Dr. Waugh recommends covering half of the cassette with lead so that one 5 x 7 film may be used for both the left and right extraoral views. Since only a sharpshooter could project the maxilla and mandible on an area 3½ x 5 inches, it is more satisfactory if not economic to obtain at least a 5 x 7 view of each side. Dr. Waugh adds another Scotchogram that only four exposures are necessary for the preliminary radiographic examination, which is a little too quick and easy to endorse. Only by definite technic and thorough routine examinations, can orthodontists hope to secure sufficient radiographic evidence to fully discharge their professional obligation.

University Club Bldg.

ABSTRACT OF CURRENT LITERATURE

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA
DENTAL RADIOGRAPHY
By Dr. Edward Preble, New York City

NUTRITION AND PEDIATRICS
By Dr. Samuel Adams Cohen, New York City

It is the purpose of this Journal to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

Orthodontia, Oral Surgery, Radiography

Skepticism as to the Nature of Vincent's Disease. Editorial in the Dental Surgeon, December 15, 1928.

When Vincent's stomatitis was first described some doubt was expressed as to its supposed bacterial origin. It was pointed out incidentally that a very similar syndrome sometimes accompanied the eruption of third molars. Recently the entire question has been agitated anew by V. Jelinek, although this author does not go on record as disputing the bacterial origin and limits himself to enumerating opposed beliefs, two in number. The first or vitamine deficiency theory seems to have been exploded by statistics of the late World War, in which epidemics occurred without any reference to dietetic restrictions. The second, or molar eruption theory, despite the behavior of individuals, does not stand up under statistics for there is no evidence that the disease is more frequent at the sixth, twelfth, twentieth or indeed any particular age period. The editors of the Dental Surgeon contrast the weakness of the arguments supporting these two theories with the strength of those which back up the bacterial origin. The Vincent symbiosis is never absent, and the disease spreads rapidly among healthy troops, while this spread is readily checked by isolation. The most that can be said on the other side, perhaps, is that other factors may produce a condition which clinically simulates Vincent's stomatitis. Even the laity knew formerly, if they do not know now, that eruption of third molars may cause a sore mouth out of all proportion to the degree of irritation, and severe enough to lead to fasting.

Etiology of Dental Caries. F. W. Broderick. The Dental Surgeon, December 15, 1928.

The author completes a long serial article on this subject with the following summary: When there is a tendency to acidemia with a drain on the alkaline reserve for neutralization there will result a change in the reaction of the saliva and perhaps a change in its calcium content—factors which lead to a decalcification of the enamel. This view does not run counter to the

theory of Miller that the acidosis in the mouth results from fermentation of the carbohydrates of the diet with production of organic acids. Rather the two causes tend to work in harmony, each contributing to the activity of the other. Nor does this view antagonize the teachings of Black that caries originates from extrinsic and not intrinsic factors, nor those of Pickerell that a poorly calcified tooth may resist caries while the well-calcified suffers. Food residues are baneful to some individuals while others are not menaced at all, thus illustrating both the predisposition and environment. But when diet is invoked we must bear in mind that there is a very close relationship between the food and the acid-base equilibrium of the body. Food articles blamed for their direct action on the teeth from local fermentation may also be of the type which lowers the general alkaline index through the constitution of their ash. Nor does the author find any antagonism between his views and the vitamine theory. Although it has been alleged that children living under identical environments including diet may show the greatest dissimilarity as to predisposition to caries, it cannot be denied that under unusual food restrictions the teeth may suffer. It is even possible to harmonize his views with the activity of the B. acidophilus as the specific factor in caries, since this merely supplies a mechanism.

Constitutional Treatment of Pyorrhea. E. Heinrich (Dresden). Zahnaerztliche Rundschau, December 9, 1928.

The author writes at great length on this subject although prophylaxis rather than treatment is the word best used as the writer admits. This subject is a difficult one for we know little of the predisposition, and the affection has always been treated as local. Paradentosis has been found in association with the most opposite general diseases, acute and chronic. If we proceed on a speculative basis we must first ask why the vital energy, the defense of the body against disease, is weakened in this case and as a local manifestation. Apparently this subject has not yet been seriously studied and invites attention as a deliberate and concerted effort. We should expect to find some anomaly of nutrition beginning in the intestine itself and expressed by some change in the normal blood formula. However, every case thus studied should be individualized. Pfaff, who wrote in 1902, thought correction of the digestion had not only a preventive but a remedial effect, and even advised the use of a digestive powder. Others have insisted on complete daily evacuations of the bowels. The author has made a study of years along this line and finds that such a course is useful in gingivitis but is of no benefit in pyorrhea per se. More promising is the subject of a special diet and quite recently alkaline predominance has been found to be injurious in all conditions of wound healing, while conversely an acidosis diet is beneficial. Apparently the question of diet is largely personal. The author mentions one case in which a vegetarian became worse after going on a meat diet. The personal equation is probably active in this affection for some patients seem to have the disease greatly aggravated by psychic perturbations. The author hardly does more than to point the way to a systematic investigation of this problem from the constitutional angle.

Nutrition and Pediatrics

The Control of Protein in the Diet. Eugene F. DuBóis. Jour. Am. Med. Dietetic Assn., Sept., 1928, iv, 2.

In an excellent review this authority recites some of the past and present views of protein in the diet. Proteins are made up of combinations of amino acids, most of which when metabolized furnish the organism both glucose and fatty acids. When protein is given in large amounts a little of it is used for the "wear and tear" quota and the remainder is oxidized furnishing body heat. After a heavy protein meal the heat production rises.

DuBóis feels that it is possible to keep men in nitrogen balance on about 40 grains of protein a day, a figure which is one-third of the ordinary dietary standards. He is under the impression, however, that there is a tendency to feed higher amounts of protein in the diet particularly, and he feels that clinicians are going to pay more attention to the dangers of partial protein starvation in chronic disease.

The Digestive Work of the Stomach. B. P. Babkin. Phys. Rev., July 3, 1928, viii, 3.

Babkin discusses some of the reflexes or factors which influence gastric secretion. The bulk of evidence supports the statement that mere chewing of palatable substances produces a gastric secretion.

The author quotes the work of Pavlov, who found that the greatest amount of gastric secretion follows the ingestion of meat; next came bread, and the smallest secretion was observed after the ingestion of milk. Milk left the stomach earlier than the other foodstuffs.

Babkin states that judging from the point of view of the secretory work done by the peptic glands, the roasted meat is the most economical of the different preparations of meat.

In regard to eggs, it was found that the smallest amount of gastric juices secreted followed the ingestion of raw egg white, and was greater with hard boiled egg white. It was greatest of all with raw egg yolk.

Fish meat and especially fish bouillon and products of digestion of fish provoke a strong secretion of gastric juice. Fish, especially lean fish, is looked on as a very digestible food, and is more easily digested than the lean meat.

In regard to vegetables, the author quotes Leporski who discriminates between two groups of vegetables (a) strong activators of gastric secretion: juices of cabbage, beet and turnip, (b) moderate activators of gastric secretion: juices of carrots, cucumber, black radish, radish and salad. Willbrand showed that raw onion increases the gastric secretion in dogs.

The author emphasizes the powerful action of even weak 5 per cent or 10 per cent solutions of alcohol as a gastric stimulant.

The action of yeast by Bikoff and Petrova in their experiments on dogs shows that it is a strong activator of gastric secretion, fresh yeast being the most powerful agent of any of the other preparations of yeast. The author recommends that yeast be taken immediately after a meal.

Experimental Anemias; Diet Factors and Related Pathologic Changes of Human Anemias. G. H. Whipple. Jour. Am. Med. Assn., Sept. 22, 1928, xci, 12.

The common food factors and their effect on blood hemoglobin regeneration, are divided by Whipple into three convenient groups.

1. The least favorable group for blood hemoglobin regeneration in simple anemias includes grains and breadstuffs, the common vegetables and some fruits, all fish and dairy products.

2. Average middle group includes some leafy vegetables, skeletal muscles including beef, pork and veal, also spleen, pancreas and brains. Apricots, peaches, prunes and raisins are included in the upper middle group.

3. In the most potent group liver (including beef, pig, sheep, calf and chicken liver) stands at the top, states the author. Kidney stands practically on a par with liver.

The Normal Diet and the Relation of the Therapeutic Diet to the Normal. Solomon Strouse. Jour. Am. Med. Dietetic Assn., Sept., 1928, iv, 2.

In an article based on his long experience with diets in health and disease, Strouse makes some general remarks on the uses and abuses of diets. The author states that what is food for one is an indigestible mess for another, and race, geography, location, occupation, racial and personal habits are as important elements in building a normal diet for the individual as are the scientific rules of nutrition.

The time has arrived to be more rigid in our analysis of what we know and to be more flexible in our attitude toward our patients.

"*Disease*" (italics author's), states Strouse, "cannot be treated by a diet; the patient as an individual with certain preestablished food habits offers himself for treatment. And," concludes the author, "if Vort's definition such proportion as will least burden the organism' is true for health, it is of food as a 'well tasting mixture of foodstuffs in proper quantity and in essential in disease."

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EDITORIALS

Professional Interest in Advertising

IN THE past the dental profession was content to allow advertisers to make any statement they desired regarding their products. The profession was little interested in the veracity of the statements made by manufacturers. As a result of this lack of interest on part of the profession we find various concerns making questionable statements regarding the value and virtue of their goods.

The Advertising Club of America has long carried on a campaign in favor of clean advertising. Traders and manufacturers who have adhered to truthful advertising have made the greatest advances from a commercial standpoint.

We have been told by men of the Advertising Club of America that the automobile industry was the first to organize for a definite stand regarding truthful advertising. In order to check up this statement you need only

examine the automobile advertisements that are appearing in the magazines of today. You may be surprised to learn that no manufacturer makes a claim that his car is better than any other car. The advertisement refers to specific facts as to quality, details of manufacture, or results actually accomplished by authorized tests as to the ability of the automobile.

The Advertising Club of America has always insisted in regard to drugs and remedies that no advertisement should claim that its remedy can "cure" any particular condition. We have also been told that the most flagrant violaters of ethical advertising method are the makers of face powder, face cream, hair lotions and dentifrices. In regard to dentifrices one need only review some of the advertisements appearing in magazines and street cars to realize that the manufacturers of tooth pastes have long been making questionable statements. Because of this condition the First District Dental Society at its December meeting adopted the following resolution:

"Whereas; the First District Dental Society recognizes the importance and value of tooth powders, tooth pastes and other dentifrices as an aid to oral health, and

"Whereas; such misleading statements tend to injure the oral health movement as related to public welfare,

"Be it therefore resolved; that the First District Dental Society in regular session assembled condemn the misleading statements of certain manufacturers of tooth powders, tooth pastes and dentifrices, and

"Be it further resolved; that each member of the First District Dental Society do all he can to enlighten his patients regarding the true value of dentifrices."

This resolution received wide publicity in the public press and was sent out on the American Press Association wires the night it was adopted. Several dailies and weeklies contained editorials regarding the resolution and called attention to the importance of clean advertising on the part of the manufacturer. The editorial published in *Printers' Ink* on December 13 was of sufficient interest to our readers to be published in full in this issue.

The editorial is as follows:

"There, in formal language, is the first sign that the dental profession as a profession is actively revolting against the super-advertising claims of certain manufacturers of the dentifrices. The First District Dental Society is an organization made up of some of the leading dentists of New York City and is the second largest district dental organization in the United States.

"The wonder is that this revolt has been so long in coming. For some time leading dentists have expressed themselves both privately and publicly as being deeply disgusted by the extravagant claims made by certain advertisers. It has remained, however, for the First District Dental Society to give official expression of this disgust. Several leading dentists, when interviewed by *Printers' Ink*, expressed the belief and the hope that this is merely the first of a number of official condemnations.

"Anyone at all familiar with the science of dentistry knows how absurd have been the claims advanced for some dentifrices as curative and preventive

agencies. Unhappily the general public does not know a great deal about the science of dentistry and has, if we may borrow an expression from the vulgate, fallen and fallen hard for dentifrice advertising. Because of this, the more flagrant offenders have adopted a public-be-damned attitude and pointed to inflated sales figures as the final answer to any questions concerning the ethics of their advertising.

"Now, however, the dental profession is beginning to express itself in measured terms. No longer is it going to be content to sit by passively and let the advertisers make any claims they care to make. From now on the dentists are going to be active opponents of the unethical advertiser.

"There is no question that the dental profession owes a great deal to a number of dentifrice advertisers. These advertisers have done a splendid work in making the man in the street conscious of his need for healthy teeth and have done much to build up the habit of 'going to the dentist.' The dentists admit their debt and are not grudging in their praise of those advertisers who have continued to build good volume without sacrificing their ethical well-being.

"The dentists of today, however, are not willing any longer to allow the unethical advertiser to ride in on the band wagon of the ethical advertiser. They are not willing to remain complacent merely because the unethical advertiser, after making extravagant claims, gives the dentist a sly pat on the back.

"The next time you go to your dentist ask him what dentifrices he recommends. The chances are pretty nearly 100 to 1 that he will not name one of the unethically advertised brands. In the past, however, he has been content to keep his dislike of certain brands to himself. In the future he will speak out—at least, he will if he is a member of the First District Dental Society.

"The resolution of the society offers a definite reward to the advertiser who has put his obligation to the consuming public above his greed. It offers a definite warning to the advertiser who has thrown ethics overboard and who has measured success merely by a warped vision, warped by a too close study of the balance sheet.

"In the long run super-advertising is never good business. *Printers' Ink* hopes and believes that during the next few years we are going to see a definite proof of this statement in what will happen to the unethical dentifrice advertisers."

The medical and dental journals which are under professional control have been censoring their advertisements for years. The *American Dental Journal* has been censoring its advertisements, but occasionally an embarrassing situation arises when advertisers who had been refused admission to the pages of the *American Dental Journal* get in as exhibitors before some state or national society.

All of the medical and dental journals are trying to limit their advertising pages to manufacturers who are reliable and who make only such claims as are substantiated. We are sure any journal will welcome its attention being called to any advertiser who is not living up to this code of ethics.

The Ninth Annual Meeting of the Southwestern Society of Orthodontists

THE meeting was held in Dallas, Texas, January 2 to 5 inclusive. The program, with only a few exceptions, was presented as scheduled, and the meeting was a success in every way. The Dallas County Dental Society entertained the Southwestern Society of Orthodontists with a banquet on Thursday evening. At this time papers were read by Drs. Wetsel, McJimsey, and Dewey. Wednesday's program included papers by Drs. Dewey, Carroll, Robison, Reppeto, Park, Spencer, Wade and Robinson. On Thursday papers were presented by Drs. Robison, McReynolds, Dewey and Oliver. Dr. Oliver presented an interesting and extensive clinic on the lingual appliance. More than twenty table clinics and case reports were given on Friday.

Following the suggestions of the committee reporting on the President's address, the boundaries of the territory of the society were definitely established, placing the states of Texas, Louisiana, Arkansas, Oklahoma, and the southern third of Kansas in our territory and excluding all except these states. This action was deemed advisable, as it seemed necessary to limit our boundary to enable us to maintain a workable organization. The arrangement was suggested by our northern members as such a plan permits them to form a Missouri Valley Society of Orthodontists. We regret to lose the northern members, but they know the latchstring is always out for them, and they are always welcome to the future session of the Southwestern Society of Orthodontists. We wish them success in their new society.

In connection with this new plan our membership is therefore definitely divided into active and associate members, active members being those in the practice of orthodontia exclusively and residing in the aforementioned territory. Associate members are those in the territory who are not in the practice exclusively, and all those outside the territory who are desirous of membership. By this plan we retain all our associate members if they so desire. Dues from associate members are only assessed upon attendance at regular sessions. The incoming officers were instructed to change the by-laws and constitution accordingly.

New members elected into the society were the following: Drs. G. C. Guest, Ft. Worth; W. P. Delafield, Dallas; F. B. Collins, Bartlesville, Okla. Officers elected for 1929 are: President, Dr. H. B. Robison, Hutchinson, Kans.; president-elect, Dr. P. G. Spencer, Waco, Texas; sec'y-treas., Dr. Curtis W. Williams, Shreveport, La. Only five active members were absent and over 50 per cent of our associate members were present. Dr. W. A. Murray of Evanston was with us as usual. Dr. W. W. Martin of Cedar Rapids was a guest in attendance. Many members of the Dallas County Dental Society attended the sessions and ably entered into discussions.

The weather man mixed up the arrangements for the golf tournament, which was postponed on account of rain from Friday to Saturday when a real "Texas Norther" was on tap. "Texas where sunshine spends the winter" pulled a "boner" before company, and the Texas members will have to get busy and correct this mistake. Under a handicap of four sweaters, an overcoat and felt boots, and with ample liquid stimulation, the championship cup,

donated by the C. V. Mosby Company, publishers of the INTERNATIONAL JOURNAL OF ORTHODONTIA, was won by P. G. Spencer. Other arctic explorers entered the endurance contest, and the lucky prize winners included W. E. Flesher, T. W. Sorrells, H. B. Robison, and H. H. Sorrells. The weather man eliminated a number of the players, and the postponement reduced the number of Dallas men who would have entered if they could have played Friday. The society is very appreciative to the following firms who donated prizes: C. V. Mosby Company, A. P. Cary Company, B. E. Trigg Company, Pearce Dental Supply Company, Pendleton-Arto, Pepsodent Company, E. H. McClure Company, Medcalf & Thomas and Harley Smith.

An unexpected pleasure was a duck dinner which Dr. Dewey gave the society. We have heard these wild tales of expert fishermen and hunters, and all the members were unanimous in proclaiming Dr. Dewey the champion hunter. He produced the evidence for the ultimate consumers. The golf banquet was omitted, due to the fact that so many desired to leave on early trains, but a farewell feed in the dining room produced plenty of "Whoppee" and sent the gang home with a promise to be back next year. The 1930 meeting will be held in Oklahoma City at a time to be selected by the executive committee.

ORTHODONTIC NEWS AND NOTES

American Society of Orthodontists

The annual meeting of the American Society of Orthodontists will be held in Estes Park, Colorado, from Monday evening July 15 to Friday afternoon July 19, 1929. Hotels: Stanley (headquarters), The Crags, Lewiston and Elkhorn Lodge. All ethical dentists are invited. A registration fee of $10.00 will be charged non-members.

Inter-Relations Committee.—William C. Fisher, New York City, Chairman; Joseph D. Eby, New York; James D. McCoy, Los Angeles; Oren A. Oliver, Nashville; W. W. Woodbury, Halifax, N. S.

Research Committee.—A. LeRoy Johnson, New York City, to serve one year; Frank A. Delabarre, Boston, to serve two years; Milo Hellman, New York City, to serve three years; Harry E. Kelsey, Baltimore, Chairman, to serve four years; Martin Dewey, New York City, to serve five years.

Educational Committee.—B. Frank, San Francisco, Chairman; Lloyd S. Lourie, Chicago; Burt Abell, Toledo; James D. McCoy, Los Angeles; Frank M. Casto, Cleveland; Oren A. Oliver, Nashville; J. Lowe Young, New York City.

For hotel information write Dr. Fred W. Beesley, Republic Building, Denver, Colorado. Regarding transportation, write Dr. Kirman E. Taylor, Mack Bldg., Denver, Colorado.

Albert H. Ketcham, President,
Charles R. Baker, Secretary,
708 Church Street, Evanston, Ill.

Eastern Association of Graduates of the Angle School of Orthodontia

The annual meeting of the Eastern Association of Graduates of the Angle School of Orthodontia will be held at the Vanderbilt Hotel, New York City, on Monday and Tuesday, May 13 and 14, 1929.

An invitation is extended to all interested in orthodontia.—E. Santley Butler, Secretary, 576 Fifth Avenue, New York City.

New York Society of Orthodontists

The annual meeting of the New York Society of Orthodontists will be held the morning and afternoon of Wednesday, March 13, 1929, at the Hotel Commodore, New York City.

An exceptionally attractive program has been arranged by the executive committee and all ethical members of the medical and dental profession are invited. Sessions open promptly at 9:30. The usual luncheon will be served between the morning and afternoon sessions.—William C. Fisher, Secretary, 501 Fifth Avenue, New York City.

Dental Society of the State of New York

Preliminary Program

The Dental Society of the State of New York will hold its sixty-first annual meeting in Rochester, New York, on May 15, 16, 17, 1929.

Literary exercises, clinics, exhibits, etc., will be held at the Columbus Building. Dr. E. G. Link, Cutler Bldg., Rochester, N. Y., is chairman of the Exhibits Committee. Dr. John T. McIntee, Cutler Building, Rochester N. Y., is chairman of the Clinic Committee.

The Executive Council will convene, for the transaction of the business of the Society, on Tuesday, May 14th at 3 P.M.

Essayists.—Dr. Frederick B. Noyes, Chicago, Illinois; Dr. Chalmer J. Lyons, Ann Arbor, Mich.; Dr. O. G. L. Lewis, Philadelphia, Pa.; Dr. P. C. Lowry, Detroit, Mich.; Dr. T. W. Mavos, Cleveland, Ohio; Dr. James K. Burgess, New York City.

During the time of the meeting, sessions of the New York State Dental Hygienists Association and the Dental Assistants Association will be held.

Headquarters will be at the Hotel Seneca and reservations should be made direct with the hotel management.

For information with reference to the literary exercises, clinics, etc., apply to Dr. A. P. Burkhart, Sec'y, 57 East Genesee St., Auburn, N. Y.

St. Louis Study Club of Dentistry Clinic and Dinner

The St. Louis Study Club of Dentistry, organized in 1919 for the purpose of teaching advanced dental knowledge to practising dentists, without charge, and in continuous operation since that time, has just completed its eleventh annual session. The close of the term will be marked by a clinic and dinner on Saturday, April sixth, at the Chase Hotel, Kingshighway at Lindell Boulevard.

The clinic, which will start promptly at three o'clock, will consist of the following subjects:

Dental Ceramics.
Fixed Bridgework.
Dental Roentgenology.
Rizadontia.
Conduction and Local Anesthesia.
Operative Dentistry.
Full Dentures.
Anatomy and Dissection of the Head.
Tooth Form and Cavity Preparation.
Dental Economics.
Oral Diagnosis and Diseases of the Mouth.

Following the clinic a dinner will be given at six-thirty as a tribute to the instructors by the students.

A cordial invitation is extended to all ethical members of the profession to attend this clinic and dinner.

Bulletins, descriptive of the Study Club, may be had by addressing Dr. Frank C. Rodgers, 309 Wall Building, St. Louis.

Notes of Interest

Dr. Charles W. Bruner announces the limitation of his practice to orthodontia, February 1, 1929, 505 Black Hawk Building, Waterloo, Iowa.

Dr. J. Wilson Harthorne announces the opening of his office at Libby Memorial Building, 156 Free Street, Portland, Maine. Practice limited to orthodontia.

Dr. Harry L. Logan announces the opening of his office at Warne Clinic Building, Pottsville, Pa. Practice limited to orthodontia.

Dr. P. J. Murphy announces his continuation in the practice of orthodontia exclusively and change of office to 1216 Medical Arts Building, Dallas, Texas.

Dr. Thomas M. Robertson announces new location of his office in Columbia Building, Coffeyville, Kansas. Practice limited to orthodontia.

Dr. Alfred Paul Rogers and Dr. William J. Speers announce the removal of their office to 60 Charlesgate West, Cor. Bay State Road, Boston, Mass.

Dr. Will C. Welch announces the opening of his office at 510 Terre Haute Trust Building, Terre Haute, Indiana. Practice limited to orthodontia.